Telephony

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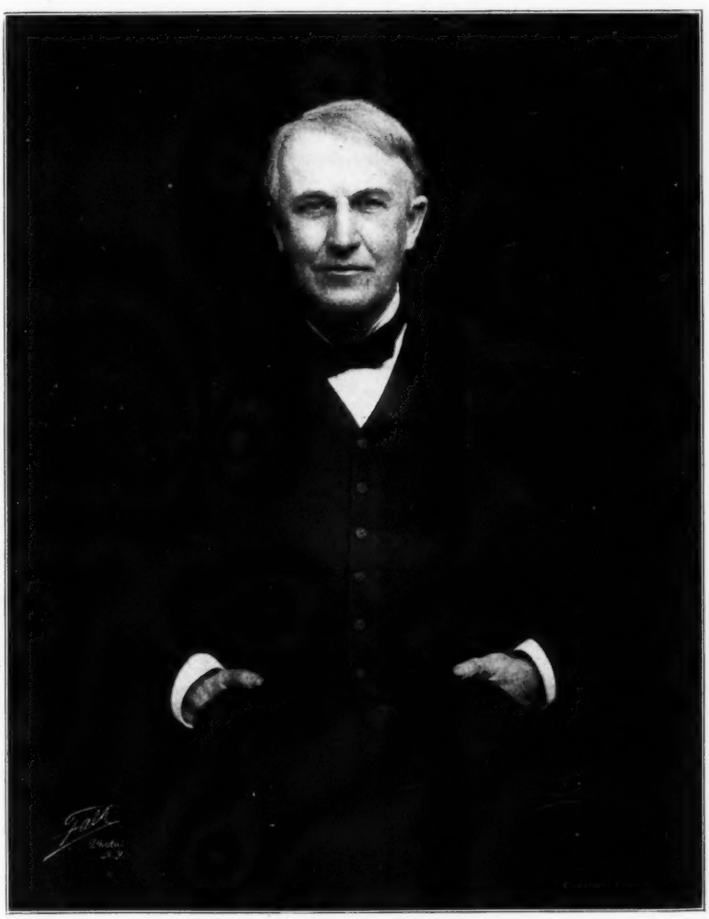
THE CHICAGO ELECTRICAL SHOW

By M. C. Barry

JUPITER OPTIMUS MAXIMUS, greatest of the Roman gods, whose power is embodied in the changes of the heavens and who can be drawn down in lightning to the earth, marked Chicago for his own last month. In spirit he occupied the Coliseum and became presiding genius of the great electrical show, that marvelous enterprise of his satellites, who, within the range of human endeavor, disclosed the mysteries and possibilities of those wonderful currents which they have plucked from the air and made obedient to the will of man.

From the fifteenth to the twenty-seventh of January this great carnival held sway. To it came wise men from afar, intent upon the study of those mysterious elements whose uttermost secrets it has not yet been given mortal to penetrate or explain. Envoys from the governments of the earth came hither and men of science and affairs from every section of the United States gathered at the great exposition.



Thomas A Edison

Never in history has there been such a carnival. Never before has there been displayed such a multitude of wonderful devices, all tributary to the invisible current which gives power and light and heat and is in itself inexhaustible. Transmission of sound and signal by wire and the projection of messages through space without the aid of artificial carriers—these things were done with as little effort as is required in the conversation of men in the same room. Illumination so intense that the direct rays of the sun were as slight tapers in comparison. Exhibits crowding every inch of the 30,000 feet of space under the roof of the immense structure. A representation of industries which have an aggregate capitalization of $300,000,000. An attendance which established a new record of vast assemblages in Chicago and conveys some idea of the interest —200,000. This was the electrical show.

Everyone was interested in the twentieth century miracles wrought by electricity and its masters. As a demonstration of the tremendous strides made by the electrical industry, the exhibition simply amazed the casual observer, and leaders in the business united in declaring that the event marked an epoch in commercial history. Financially the show was a pronounced success. What is of more importance, speaking broadly, the exposition effectively served the purpose of exploiting the electrical industry, and the exhibitors—who included the leading firms in all lines—left the Coliseum with the knowledge that the investment of money, time and labor had proved profitable.

The Chicago electrical show is certain to become the big event of the year. Although it was the initial meeting, and attended by the handicaps which accompany

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all first attempts, the exposition broke all Coliseum records for attendance. To quote the late Mr. Barnum, it was "the greatest show on earth."

It would have done honest old Ben Franklin's soul good to have witnessed the wide-spread interest manifested in the electrical display. To start the show with appropriate eclat the President of the United States sent a message by "wireless" the opening night, and as the words, "Con-

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Samuel Insull, President.	John Jay Abbott, Treasurer.
Chas. E. Gregory, Vice-Pres.	Stewart Spalding, Secretary.
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Gorman, Samuel J., Vibratory Appliances.
Hunting, F. S., Fort Wayne Electric Co.
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McMeal, E. M., Telephony Publishing Co.
Millard, A. L., Westinghouse Electric & Mfg. Co.
McFedries, S. M., Treas., J. L. Schureman Co.
Mitchell, C. E., Western Electric Co.
Mock, E. J., Telephony Publishing Co.
McKinlock, W. H., Metropolitan Electrical Supply Co.
McGill, J. H., Crescent Co.
Niesz, Homer E., Chicago Edison Co.
Overshiner, E. B., Swedish-American Telephone Co.
Overshiner, A. V., Swedish-American Telephone Co.
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Rockwell, Edwin R., Guarantee Electric Co.
Rousseau, A. J., Automatic Electric Co.
Roth, G. A., Roth Bros. Co.
Raymond, Francis, Manufacturers Agent.
Roe, Julian, Crocker-Wheeler Co.
Spalding, Stewart, The Coliseum Co.
Shaw, Gilbert B., Guarantee Electric Co.
Schureman, J. L., Controllers.
Schwab, Louis, Monarch Electric and Wire Co.
Thordarson, C. H., Electrical Manufacturer.
Tripp, Hermann, Tripp & Co.
Waterbury, A. L., American Conduit Co.
Wolff, James, New York Insulated Wire Co.

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Samuel Insull.	C. E. Mitchell.	Stewart Spalding.
T. P. Gaylord.	Homer E. Niesz.	Chas. E. Gregory.
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H. B. McMeal.	G. H. Atkin.	A. L. Waterbury.

LIST OF EXHIBITORS AT THE ELECTRICAL SHOW.

Ackerman-Boland Telo. Co.
Acorn Reflector Co.
Allis-Chalmers Co.
American Bank Protection Co.
American Circular Loom Co.
American Conduit Co.
American DeForest W'less T.Co.
American Electric Fuse Co.
Am. Elec. Novelty & Mfg. Co.
American Electric Sign Co.
American Electrical Supply Co.
American Steel & Wire Co.
Armour Institute.
Arthur, Adam.
Automatic Electric Co.
Belden Manufacturing Co.
Benjamin Electric Mfg. Co.
Bryan-Marsh Co.
Bryant Zinc Co.
Bullock & Co., T. H.
Camp Co., H. B.
Central Electric Company.
Central Electrical Mfg. Co.
Chicago Battery Co.
Chicago Compound Battery Co.
Chicago Edison Company.
Chicago Lamp & Reflector Co.
Chicago Pneumatic Tool Co.
Chicago Solder Co.
Chicago Telephone Co.
Chicago & Milwaukee Teleg. Co.
Consumers Co.
Cook, Frank B.
Crane Co.
Crocker-Wheeler Co.
Crockett, Wm. P.
Dossert & Co.
Edwards Electric Headlight Co.
Electric Appliance Co.
Electric Gas Lighting Co.
Electric Storage Battery Co.
Electrocraft Pub. Co.
Electro-Dynamic Co.
Engineer Pub. Co.
Engineering World.
Federal Electric Co.
Freed, A. L.
Ft. Wayne Electric Works.
General Electric Co.
General Electric Co.
General Storage Battery Co.
Gorman & Co., Sam J.
Guarantee Electric Co.
Haller Machine Co.
Hamburger, Felix.
Historical Exhibit.
Holcombe & Co.
India Rubber & Gutta Percha Co.
Krantz Mfg. Co., M.
Lang Electric Co., J.
Larsen-Baker Ice Machine Co.
Lincoln Electric Mfg. Co.
Manhattan Electrical Supply Co.
Mark Mfg. Co.
McRoy Clay Works.
McFell Electric Co.
Metropolitan Elec. Supply Co.
Miller Anchor Co.
Monarch Electric & Wire Co.
National Carbon Co.
Newman Mfg. Co.
Niagara Tachometer & Instrument Co.
North Shore Electric Co.
Nungesser Electric Battery Co.
Oliver Mfg. Co.
Osburn Flexible Conduit Co.
Overbagh & Ayers Mfg. Co.
Paiste, H. T. & Co.
Peabody Coal Co.
Peru Electric Mfg. Co.
Petersen Mfg. Co., H. A.
Phoenix Glass Co.
Porter & Berg.
Purdue University.
Raven Mining Co.
Reynolds Elec. Flasher Mfg. Co
Reynolds Dull Flasher Mfg. Co.
Roebling's Sons Co., John A.
Roth Bros. & Co.
Rothelle, E. M.
Safety-Armorite Conduit Co.
Schiedel & Co., W.
Schott, W. H.
Schureman Co., J. L.
Simplex Electric Heating Co.
Standard Electrical Mfg. Co.
Stanley, G. I., Electric Mfg. Co.
Stromberg-Carlson Telo.Mfg.Co.
Sturtevant, B. F. Co.
Sullivan & Co., J. P.
Swedish-American Telo. Co.
Taylor, J. F.
Telephony Pub. Co.
The Fair.
The Westinghouse El. & Mfg.Co.
Thordarson, C. H.
Universal Elec. Storage Bat. Co.
University of Illinois.
University of Wisconsin.
Vesta Accumulator Co.
Wagner Electric Mfg. Co.
Western Electric Co.
Western Electrician Pub. Co.

gratulations and best wishes. Theodore Roosevelt," were recorded at the Coliseum station of the American De Forest Wireless Telegraph Company the machinery moved and the great exposition was an actuality. More than 15,000 people were present the opening night, which, by the way, proved to be about the average attendance of the entire fortnight.

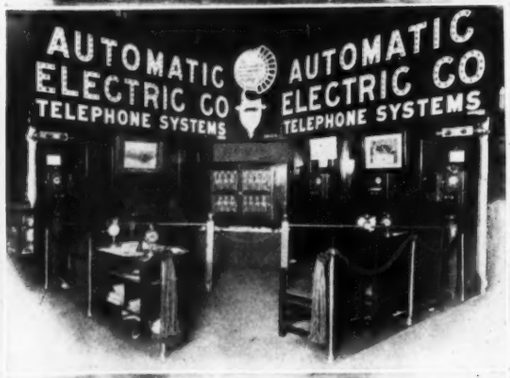
Too much credit cannot be awarded the sixty leaders in the electrical industrial world who created the great exposition and made it such a wonderful success. Co-operating with them were the exhibitors who manufacture or handle all the wonderful apparatus displayed at the Coliseum, and by no means last the electrical, telephone, telegraph, technical and lay press deserve credit for the publicity given this exposition.

As the show continued the general public manifested an ever-growing interest in the wonders on exhibition. Afternoons and evenings the aisles were jammed with visitors inspecting the exhibits. Daily concerts by Weil's band of St. Louis proved to be a pleasing feature of the entertainment. Leading colleges gave substantial proof of their keen interest in the exposition by sending delegations of students, who are being educated along electrical lines, to Chicago during the show, and Purdue, Wisconsin, Illinois

E. B. Overshiner, **Vice-President.**
Thomas R. Mercein, General Manager.

Homer E. Niesz, Chairman of Publicity Committee.
The Coliseum Building, Chicago.
H. B. McMeal, Director.

Charles E. Gregory, Vice-President.
Charles R. Macloon, Press Agent.



and Armour Institute had exhibits which attracted favorable attention.

The men who labored incessantly to make the show successful were the officers and directors of the Electrical Trades Exposition Company. Those who devoted a great portion of their time or influence were Samuel Insull, president of the company; Homer E. Neisz, chairman of the publicity committee; E. B. Overshiner and Charles E. Gregory, vice-presidents; Thomas R. Mercein, general manager; Charles R. Macloon, press agent, and H. B. McMeal, director. These men planned the show and carried out all the details, which in an exposition of this kind were many and arduous, and when the great exposition opened it was a marvel of beauty and completeness. This first and succeeding shows will be a monument to their work and perseverance.

Some of the features of the show were:

The Thordarson exhibit, where many interesting demonstrations were made, one of which was with a high tension spark discharge, producing a spark nearly ten feet long. Six hundred thousand volts of electricity were used in this demonstration.

College row, so called because the leading colleges had exhibits of their laboratory product and experimental and scientific work. The University of Illinois, University of Wisconsin, Armour Institute, University of Colorado and Purdue University were represented.

The great electric searchlight used at the St. Louis World's Fair was installed on the top of the Coliseum and received much favorable comment. It can be seen for a distance of twelve miles and is the largest searchlight of its kind in the world.

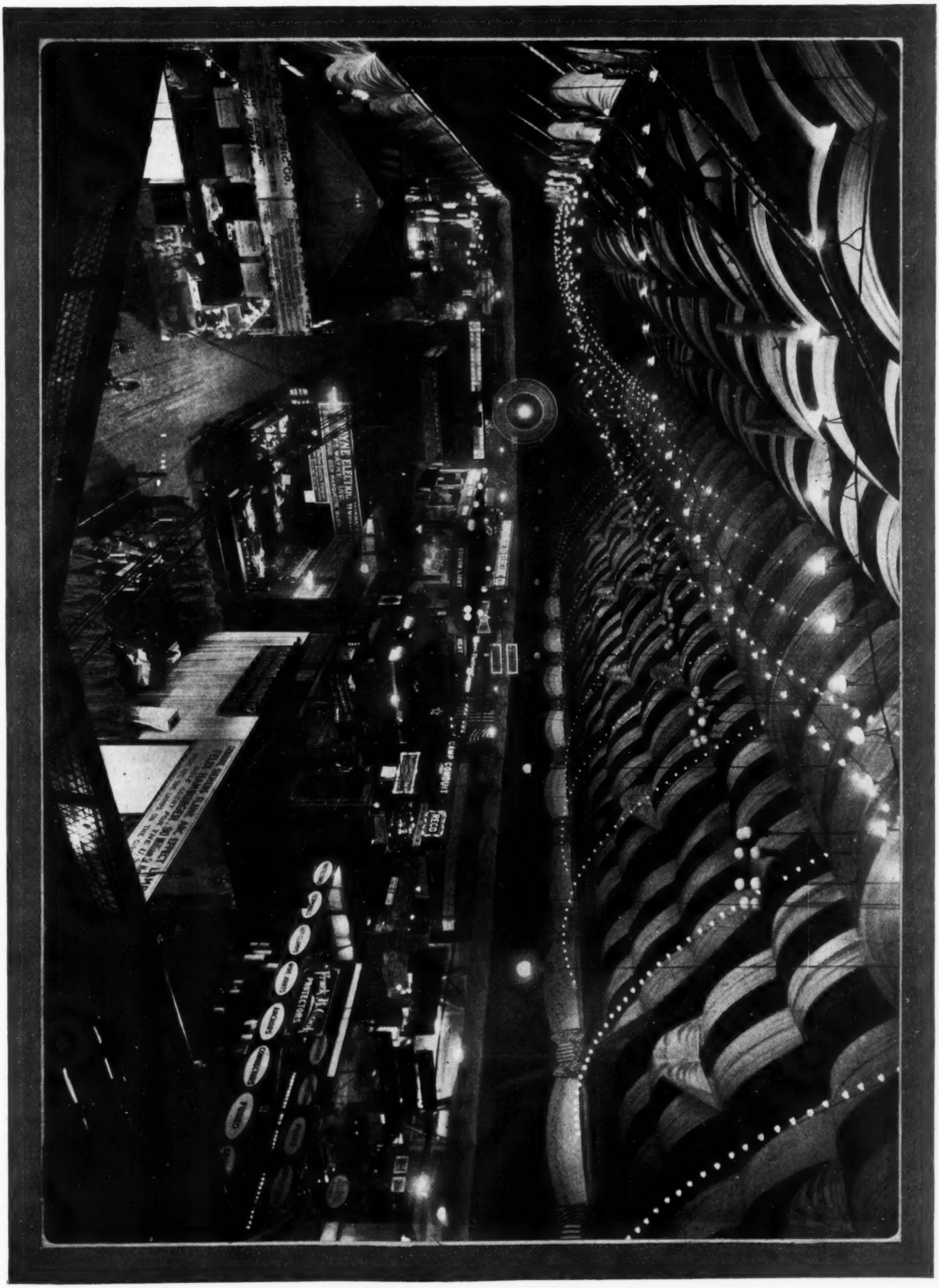
At the south end of the building was mounted a large star, revolved by a motor and containing many hundred different colored incondescent lamps. The effect as the lights turned on and off, changing color constantly, was one of the sights of the show.

Professor Clarke's lectures in the Coliseum Annex were always crowded and proved one of the interesting features. His experiments were along the line of high-tension high-frequency work, and he passed high-frequency high-voltage currents through his body during the course of his lecture.

The flaming arc lamps were a novelty that attracted the attention of everyone. A row of these lamps were suspended down the center of the Coliseum and the soft but intense light which they emitted brought forth much favorable comment. Part of these lamps emitted a pinkish light, part a bluish light and the remainder a nearly white light.

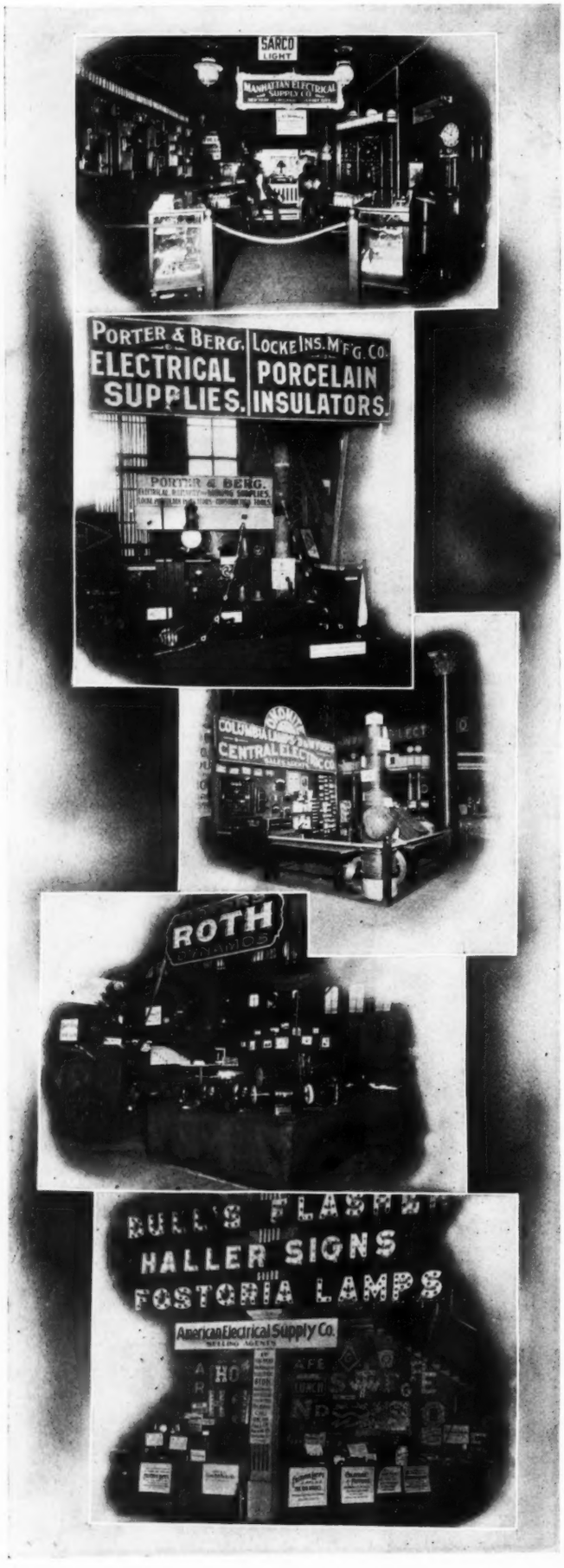
The Chicago Edison exhibit was a very elaborate one and was always thronged. The company printed daily editions of its publication, "The White City," running the editions on a press installed in one of the company's exhibit spaces.

The exhibits of such concerns as the Swedish-American Telephone Company, Automatic Electric Company, Electric Appliance Company, Stromberg-Carlson Telephone Manufacturing Company, American Electrical Supply Company, Frank B. Cook, Electric Gas Lighting Company, Universal Electric Storage Battery Company, American Electric Fuse Company, Manhattan Electrical Supply Company, I. A. Bennett, H. B. Camp Company, Central Electric Company, Chicago Compound Battery Company, M. B. Austin & Company, Geo. W. Conover & Company, Whitney Electrical Instrument Company, Indiana Rubber & Insulated Wire Company, Roth Bros. & Company, Nungesser Electric Battery Company, Miller Anchor Company, American Conduit Company, McRoy Clay Works, G. M. Gest, Monarch Electric & Wire Company, Rock Island Battery Company, Porter & Berg National Wire Corporation, Guarantee Electric Company, Metropolitan Electrical Supply Company, Thomas G. Grier, New York Insulated



J. W. Taylor Photo Company.

General View of the Electrical Show Held at the Collseum, Chicago, January 15-27, 1906.



Wire Company and Telephony Publishing Company received many compliments on the attractive display made and commanded the interest and attention of the visitors to the show.

On Friday night, January 26, the officers and directors of Annex Hall. Mr. Samuel Insull, president of the Electrical Trades Exposition Company, acted as toastmaster, and in Traders' Exposition Company, acted as toastmaster, and in behalf of the exposition company thanked the exhibitors for their kindness in helping to make the show a great success. He complimented the management and predicted a much greater and better show next year.

Addresses were made by Mr. McQuisten of the Westinghouse Electric and Manufacturing Company; Mr. Odell of the De Forest Wireless Telegraph Company, Mr. Burley Ayres of the American Steel and Wire Company, Steward Spalding of the Chicago Coliseum Company, Mr. Gentry of the American Telephone Telegraph Company, Mr. Overshiner of the Swedish-American Telephone Company, Mr. Mercien of the Electrical Trades' Exposition Company, Mr. Gregory of the Guarantee Electric Company, and Mr. Niesz, chairman of publicity of the Electrical Trades' Exposition Company. A telegram was read from Thomas A. Edison, regretting his inability to be present at the banquet and expressing his best wishes for the success of the exposition and the prosperity of electrical men.

There were days of special interest at the show, such as Franklin day, Thomas A. Edison day, three telephone days, electrical workers' day, professional day, clergy day, college day, etc.

The following interviews with exhibitors will give an idea of the commercial, technical and educational value of this great exposition:

Swedish-American Telephone Co.—The show was a success from our standpoint and the public's. We did more business than at any two conventions we ever attended. Of the telephone men who visited the exposition, nine out of every ten were buyers—they had no convention business to distract their attention. We will be back next year with our very best goods, and expect the next show to be even better than this. By way of suggestion, let us hope that some special attractions will be gotten up for telephone visitors next year and that every effort will be made to secure their general attendance. We also favor a more uniform arrangement as to decorations and arrangement of booths next year.

Westinghouse Electric and Manufacturing Company—The show was more successful than we hoped for, and the management is to be congratulated. We were well pleased with results and will be in evidence next year on a larger scale.

Automatic Electric Co., Chicago—This exposition was in many ways the most successful and most satisfactory at which we have exhibited. The character of the crowds was high class and everybody appeared pleased and interested. Buyers and prospective purchasers generally devoted the daytime to a careful study of the various features of the show, while those seeking merely entertainment or information came at night. This arrangement, generally understood next year, will work out to the still greater advantage of those who come for business. There is no reason why the real business—the buying and selling features—of such an exposition should not all be concluded during the quieter hours of the morning and early afternoon. Let us emphasize the fact for next year. The management of the show was exceptionally good. Our showing was satisfactory. We want more space next year.

Burley Ayres, American Steel and Wire Company—We are mighty well pleased with the exposition, and its success was pronounced. We will exhibit next year, and believe the show will be bigger and better each succeeding year.

Stromberg-Carlson Telephone Manufacturing Company,

Chicago and Rochester, N. Y.—This exposition profited us as much or more than any telephone convention we ever attended. We consider it excellent, especially when it was the first of its kind attempted west of New York. In proportion to its duration, we believe it even excelled the St. Louis Fair in results. Would it not be a good idea to hold our national telephone convention in connection with this show next year, and make special efforts to get all of the telephone men of the country to attend?

C. A. Tupper, Allis-Chalmers Company—The show has been of inestimable value from an educational standpoint, and a permanent electrical exposition will be of great benefit to the industry. We will exhibit next year.

Manhattan Electrical Supply Co., Chicago and New York, Mr. F. M. Pierce, manager—I can not recall a show which pleased me more or did our company so much good. Sales both at our booth and at our down-town store took a big jump while the exposition lasted. We also got in touch with a lot of prospective new business. There was quite a bit of extra work and expenses entailed, it is true, but I for one learned during this show a lot of things which will be helpful to us next year. I look for the next show to be a "hummer." Let us all go to work early and earnestly to make it such. The Manhattan can be counted on to do its share.

P. E. Odell, De Forest Wireless Telegraph Company—Of course we will be here next year. Didn't we open the show with the president's wireless message. It has done our company a world of good. Colleges sent classes to our exhibit every day, and we believe our exhibit was the feature of the exposition.

Central Electric Co., Chicago—We found a surprisingly large number of well-informed visitors in attendance at this show. Our exhibit included a number of features which elicited marked attention. Amongst these were the D. & W. Fuses for telephone and telegraph protection; the Edison primary batteries, which are coming more and more into use for telephone purposes; the Columbia lamps; the Williams-Abbott telephones and the big display of Okonite. Telephone men in particular were delighted with the Candee patented potheads, which prevent the destructive attacks of water and moisture upon "paper cables." The piece of twisted cable showing the great torsion which Okonite will stand without breaking the insulation also came in for considerable attention. Next year we expect to exhibit on a much larger scale. This show has been very gratifying to us, and the next one will doubtless prove even better.

F. L. Pardee of Frank B. Cook—The show was 500 per cent ahead of expectation. There was more real interest manifested in it on the part of the general public than any similar exposition I ever witnessed. Exceptional interest also was shown by the electrical trade. Our direct returns will pay for all expenses and we also got a lot of good prospects for the near future. We certainly will exhibit next year. The telephone features, I believe, could be very profitably dwelt upon and enlarged next year. The janitor service also might be improved. The business management was fine. We, and I understand all other exhibitors, were delighted in this respect. You may quote me as saying that the management was generous, courteous and helpful in every way.

L. Schwab, vice president Monarch Electric & Wire Co., Chicago—This show was "the best ever" from our standpoint. You can not make that too emphatic. We had customers at our booth from all over the central states. Next year we will occupy the same space and probably more and will pull off some stunts that will surprise the natives. The Chicago exposition brought manufacturers, dealers and customers much closer together. The management was fine, and too much praise can not be given those who placed their faith and their cash in this venture,

at an experimental stage. More uniformity in the exhibits would be desirable, we think, for next year.

Mr. J. B. Olsen, sales manager India Rubber and Gutta Percha Insulating Company, New York—Our line is so thoroughly well known and standard in its character that we hardly expected to do more here than exhibit samples in a neat way, out of courtesy to our many customers in Chicago and the West. However, we were called upon by many in a buying frame of mind and we were very glad indeed, to accommodate them. The first Chicago electrical exposition was a great success and deserved to be. Its management is in the hands of clean, courteous and capable gentlemen. We delight in exhibiting under such circumstances and shall continue to do so as long as such fortunate conditions shall prevail.

Mr. M. A. Loeb, general manager Rock Island Battery Company, Cincinnati, O.—You may know that the Rock Island battery is all right and will stand any test when I say that our new factory was completely destroyed by fire last week, and yet we show up here with the best battery exhibit in the business and rake in big orders, just the same as if nothing had happened. While I am here taking these orders, materials are being rushed to Cincinnati in large quantities by fast freights and express and a big force of workmen are arranging a new factory, so that we will resume operations fully within the next week or ten days. This exposition has been a wonder. I am more than pleased with the show, its management and our results.

Miller Anchor Co., Norwalk, O.—We make it a point to be represented at all the good shows, and this was one of the best. Both ourselves and our Chicago representatives, Porter & Berg, enjoyed a good business during the exposition. We were impressed with the careful watch which was kept to have all exits quickly opened in case of fire or panic. Chicago evidently has learned that lesson well.

Universal Electric Storage Battery Co., Chicago, J. S. Burnet, secretary—Our opinion is that the show, generally, was excellent. We had many inquiries, did quite a volume of business and feel that we have gotten our money's worth with good measure. We had some little difficulty in getting our exhibit properly arranged, but, all told, we got through very nicely, considering that this is the first show of the kind undertaken here. The management was unusually courteous and clever. As a sincerely friendly suggestion, I would say that possibly a few details might be improved upon by patterning after the Automobile show, which furnishes all exhibitors with uniform carpeting, railing, signs and a certain amount of furniture, proportioned to the size of each exhibit.

American Electrical Supply Co., Chicago—You may know that we are pleased with this show when we tell you that during it we placed over 200 new names on our customers' list, and had 75 others ask us for a copy of our new catalogue. We consider our investment in making an exhibit an excellent one. Back next year? Sure! We have no serious criticisms to offer. The management did nobly.

J. Allen Haines, Inc., Chicago—Our exhibit paid for itself twice over. We aimed to make a display which would appeal to the general public as largely as possible, and our efforts in that direction proved very successful. While there were, doubtless, many who came for sightseeing only, a very large percent appeared interested, and we believe that if crowds had permitted at night we could have effected a greater volume of sales. Many who halted at our booth to point out this article or that and who undertook to ask prices and get information regarding the articles in which they were interested, often were pushed on by the surging crowds, and we doubt if many of them found their way back. In the face of such conditions we think we did very well. Of course, we expect to exhibit next year and make a much finer display. In the meanwhile, let some one figure out how to get as many people there as possible during the

daytime. How would it do to charge only 25 cents admission between the hours of 10 a. m. and 2 p. m.?

The A. H. Andrews Co., Chicago—Our company showed its telephone operators' chairs and other metal office furniture to advantage in a number of places about the Coliseum, and we derived excellent results. The Andrews operator's chair has made a big hit with the majority of telephone companies. Our Mr. Kellogg brought out the first chair of this type, at Mr. Andrews' personal suggestion, some months ago. Since then there have been a number of imitations attempted, but we believe our chair still superior. It is meeting with most gratifying success. The electrical exposition was a great success and we got our share of the business.

Wm. Goltz, of the Haller Machine Co.—We are well satisfied and have no criticisms to offer. The verdict of all is that the show has been a great success.

Geo. W. Conover, of Geo. W. Conover & Co., Chicago—We had enough actual sales by the first Saturday night of the show to make a profit on our expenses. We fortunately had, in the Equipoise telephone holder, an article which appealed to the general public.

J. L. Haas, Central Electric Mfg. Co., Rock Island, Ill.—While our Black Hawk dry battery is a brand-new thing, we found it was appreciated by those who attended the show and we did a fine business. We will be back next year and have nothing but commendation for the management. Personally, I was somewhat annoyed by the ridiculous racket made by some of the electric horns, and I contracted a severe cold from a draughty door near our exhibit, but I realize that such things are hard to avoid.

Chicago Compound Battery Co.—While we were presenting a new proposition, we found it well received and attracting general attention. We came in touch during this show with lots of telephone, electrical and railroad men who will be of material aid in our business.

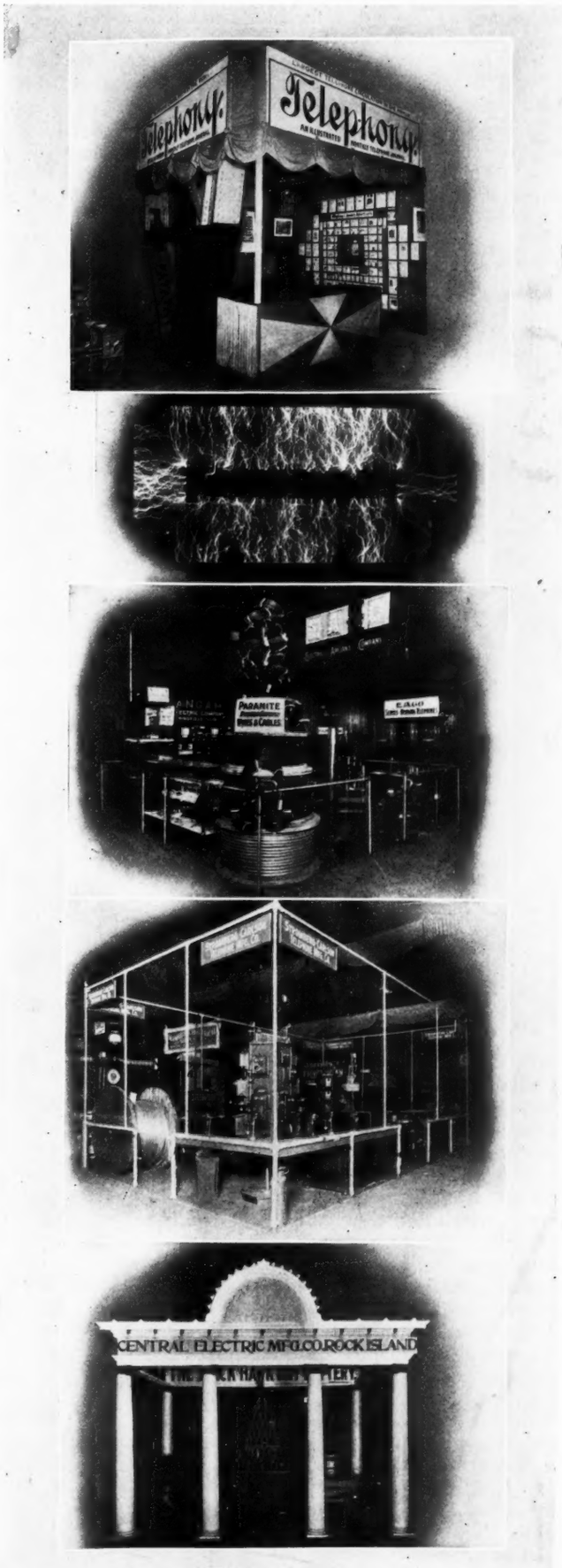
Electric Appliance Co.—We consider the show a big success. We did lots of business while it lasted. The attendance from out of town was gratifyingly large and all the visitors who called at our booth expressed themselves as thoroughly pleased. To attract still more central station men and prospective buyers from out of town should be one of the first aims of the management for next year. You may count on us being there—bigger and better than ever.

H. H. Albert, of the Star Electric Co.—The show pleased us. We derived direct returns and a lot of good prospects. Our Diamond S. S. dry battery and testing apparatus proved particularly strong features with the telephone visitors. The management treated us splendidly. If we had any suggestions to make at all, they would probably be that the spark exhibit might be removed to the annex or lecture room, and the big generator in the northeast corner placed in the basement on account of the noise.

Mr. Robert C. Shaal, of the General Storage Battery Company, New York—I have no hesitancy in pronouncing the Chicago show an unqualified success. There is no doubt but that we will be back next year with our very best and latest goods. We did a good business during this exposition and laid the foundation for further results in the near future. As to the management, we consider it splendid, and we are perfectly content to leave in its hands all changes and improvements contemplated for next year. Mr. Chas. E. Gregory, in particular, showed us many favors and impressed us as being a very popular and efficient member of the board.

B. F. Sturtevant Co.—We got out of this show all that we could expect. We even sold the steam-electric generating set which we employed as a working exhibit. Next year we expect to exhibit some special features and on a larger scale.

Ft. Wayne Electric Works—One of the features of our exhibit was the prepayment meter, and very naturally the



people we were looking for were the central station men. In this respect we were delighted. Customers showed up from points as remote as San Francisco, Waco, Texas, and New Orleans, and we have taken a big lot of orders. Of course, we will be here next year, and will do our best toward making the show better by exhibiting a line of larger apparatus, such as multiphase generators and our finest motors. We have been delighted with the general conduct of the show. There are some minor details which could be improved upon. We believe that next year it should be arranged so that the general public will get more for their money. Such things as X-ray demonstrations, souvenirs, etc., are helpful. Visitors this year hardly knew of anything in the shape of entertainment, except Prof. Clark's lectures and the band, and the music was generally spoiled by the noise. Perhaps next year also the management will be able to help exhibitors more in getting their exhibits installed. We had some trouble and a lot of unnecessary expense incurred at the very outset this year. These little criticisms are offered in the kindliest spirit and because we want to see this great and successful show made as nearly perfect as possible next year. The general management was splendid, being courteous and liberal to a degree.

American Electric Fuse Co.—We want more space next year. The success of this year's initial exposition has encouraged us to make a greater and more interesting exhibit next year. We believe you will find this generally true of all the exhibitors. Next year, we hope the telephone features will be given more prominence and more firms be represented.

Wm. P. Crockett Co. (De Veau Telephones)—This was a fine show, from an advertising standpoint, and we got a nice lot of business during it. The management generally was excellent. However, we would suggest that next year, if possible, the aisles should be widened to accommodate the great crowds at night. Many who really wanted to stop and examine our exhibit—some possibly with a view to purchasing—were pushed on by the surging crowds.

Warner Electric Company, Muncie, Ind.—It was a great exposition in every sense of the word.

Steward Spalding, secretary of the Coliseum, said: The show was the greatest success in the history of the Coliseum, and broke all records for attndance.

A. L. Waterbury of the American Conduit Company—We had more results from the two weeks of this exposition than from the six months we exhibited at the World's Fair at St. Louis. It was an unqualified success.

C. R. Hall of the Coliseum stated that the class of exhibits were exceptionally fine and that it was the biggest industrial success he had ever seen.

A. H. Friend of M. B. Austin & Company—The show has been a very great success. The remarkable feature was the out-of-town attendance. We will want more space next year. Our company was pleased with the results in every way and desires to compliment the management for the able way in which the whole affair was handled.

L. A. Ferguson, second vice president Chicago Edison Company—Our company was agreeably surprised at the attendance and interest. In every way the show was a great success, and its educational value will be lasting. We will, of course, exhibit next year, and believe the commercial and educational advantages of this annual electrical exposition will be appreciated by electrical men throughout the country.

G. A. Roth, secretary and treasurer of Roth Bros. & Company—The show was very successful. We found it profitable to exhibit and will be with the exposition company next year with a larger and more elaborate display.

C. E. Gregory, president Guarantee Electric Company—The show, from an educational standpoint, was of great value. The interest of students and young men was very marked. Commercially it was of untold benefit to all interested in electricity, and I believe it will prove to be the greatest permanent exposition of its kind in the world. At this first show electrical men from Salt Lake to Boston and from Canada to New Orleans were in attendance. The out-of-town registration was particularly heavy. Everybody connected with such a signal success should be congratulated.

C. E. Freeman, Armour Institute—The attendance was a surprise, and the interest in our exhibit was marked. Our students nearly all attended, and, beyond question, we will be here next year. We wish to compliment the management on this splendid exposition.

John M. Shuster, University of Wisconsin—The show has been successful in every way, due to its splendid management. The exhibits were interesting and up to date. The exhibitors, visitors and management all profited by this show.

R. W. Harris, Purdue University—It has been a successful, interesting and instructive show. Our exhibit was remarkable from the fact that all apparatus shown was made, tested and exhibited of our students.

C. H. Thordarson—The show was a success, and we should all feel gratified at the attendance and interest.

E. F. Kirkpatrick, McRoy Clay Works—To say we are satisfied with this exposition is putting it mildly. It was a success from every standpoint, and I believe it will be greater and better each year.

E. L. Callahan, General Electric Company—This show was the greatest of its kind ever held and has done much for the electrical industry. The large attendance, both local and from outside points, was most gratifying, and the interest in all exhibits was keen. We are perfectly satisfied with results and will unquestionably exhibit next year.

George A. Gray, Chase-Shawmut Company—The show was an unexpected surprise in attendance and interest. We believe every exhibitor profited by being present. The whole affair is a matter for mutual congratulations.

E. M. Rothelle—The show was successful beyond any one's expectations. Next year's show will be more so. The management is to be congratulated. The electrical industry has a permanent exposition, of which every one interested may justly be proud.

Thomas Greer, Nungesser Electric Battery Company—The expression of approval is unanimous. The show has been a pronounced success, and we will be here at the old stand next year. Our compliments to the management and best wishes for the continued success of the annual electrical exposition.

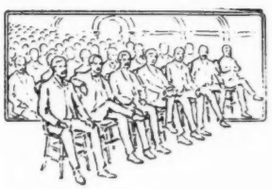
M. K. Akers, University of Illinois—The show was an emphatic success. We have reached a class of people impossible to reach heretofore. Think it is a good thing for colleges to exhibit. All of our students interested visited our exhibit. We expect to be here next year.

Godfrey H. Atkin, Chicago manager Electric Storage Battery Company—The large attendance indicates the deep interest of the public in everything electrical and their desire to learn all they can on technical matters. We particularly noted the attendance of our out-of-town customers from all over the West and Northwest. We will certainly exhibit next year.

William Weil, director of Weil's Band—I have never seen people so interested in something they could not see. It is, beyond doubt, the greatest of all industrial shows. The management was the best I have ever seen, and the success of the exposition as a permanent thing is assured. The crowds were large and appreciative, and it was a pleasure to take part in so successful a show.

NEBRASKA TELEPHONE CONVENTION.

The Nebraska Independent Telephone Association held its annual convention on January 23 and 24 at the Lindell Hotel, Lincoln, Nebraska. The meeting was one of the largest in the history of the association.



NORTHWESTERN CEDAR-MEN'S CONVENTION

By L. C. Anderson

THE Northwestern Cedarmen's Association held its tenth annual convention in the Nicollet Hotel, Minneapolis, on January 9. About thirty-five producers of white cedar from Minnesota, Wisconsin and Northern Michigan were in attendance, it being one of the best attended and most important meetings of cedar interests ever held.

A year ago it was decided to reorganize on a new basis. This included the employment of a secretary to devote his entire time to association work, and the inauguration of work, which has proven satisfactory and valuable to cedar producers during the past year. Especially has it proven valuable because of the statistical information furnished through the secretary's office.

Marshall H. Coolidge, President Northwestern Cedarmen's Association.

President M. K. Bissell of Escanaba, Michigan, called the morning session to order shortly before eleven o'clock. He said it had been thought advisable to hold a morning session to hear reports and get the standing committees started on their work, which would be followed by committee reports on the afternoon. He called upon Secretary M. O. Nelson for the minutes of the meetings of the past year, but as the secretary had understood it was not the custom to read the minutes, he had left the book of record in his office, but would have it at the afternoon meeting.

THOSE IN ATTENDANCE.

The secretary then called the roll, showing the following representative cedarmen present:

M. K. Bissell, Erickson & Bissell, Escanaba, Mich. O. Erickson, Erickson & Bissell, Escanaba, Mich. Marshall H. Coolidge, Marshall H. Coolidge Company, Minneapolis. F. L. Olcott, Beaver Dam Lumber Company, Cumberland, Wis. E. Huser, Beaver Dam Lumber Company, Cumberland, Wis. H. S. Gilkey, Pendleton & Gilkey, Minneapolis, Minn. Hall L. Brooks, Tomahawk, Wis. W. B. Thomas, White Marble Lime Company, Manistique, Mich. H. F. Partridge, T. M. Partridge Lumber Co., Minneapolis. L. A. Page, Page & Hill Company, Minneapolis. A. S. Bliss, R. Connor Co., Marshfield, Wis. P. W. Raber, Raber & Watson, Chicago. T. P. Bradley, Duluth Log Co., Duluth. Geo. J. Backus, Dumas-Backus Lumber Co., Minneapolis. L. E. Olson, Dumas-Backus Lumber Co., Minneapolis. W. P. Bowering, C. H. Worcester Co., Chicago. E. L. Clark, Valentine-Clark Co., Chicago. J. E. Gerich, MacGillis & Gibbs Co., Milwaukee. J. A. McDavitt, Cloquet Tie & Post Co., Cloquet, H. M. Dixon, Cloquet Tie & Post Co., Duluth. J. G. Leech, Francis Beidler & Co., Chicago. R. R. Genge, Francis Beidler & Co., Chicago. A. T. Naugle, E. E. Naugle Tie Co., Chicago. Gilbert G. Shaw, E. E. Naugle Tie Co., Chicago. Joseph Naugle, E. E. Naugle Tie Co., Chicago. H. W. Reade, Pittsburg & Lake Superior Iron Co., Escanaba, Mich. L. R. Martin, Duluth. W. T. Watkins, Pillsbury - Watkins Co., Minneapolis. W. P. Miller, Minneapolis Cedar & Lumber Co., Minneapolis. F. P. Werner, Pillsbury - Watkins Co., Minneapolis. Daniel Wells, Ford River Lumber Co., Wells, Mich. Wesley Wells, Ford River Lumber Co., Wells, Mich. Wm. Mueller, Jr., Chicago. M. O. Nelson, secretary, Minneapolis.

SECRETARY'S REPORT.

Following the roll call the secretary presented his report for the year. He prefaced his remarks with the statement that since the members of the association had been kept notified during the year of the work done by the secretary's office, his report would necessarily be brief. The report follows:

"This report will be brief for two very good and sufficient reasons, one that the bulk of the report is now in your hands in the form of the summaries of reports, first, on the sales for 1904, second, of stocks cut and purchased for 1905, and third, the dry stocks on hand Jan. 1, together with a summary of estimates of the cut of the present winter as compared with that of a year ago. The second reason is that you have been kept fully informed of the activities of the association through the secretary's office from time to time throughout the year.

"A few explanations may make these reports more clear.

It must be admitted that it is, under the present conditions of cedarmen's records, impossible to get uniform reports. Some producers make no detailed reports of stocks. There are a few such lump reports in the summaries as shown. For some of these data is given whereby they may be reduced to detail. But in the summary of sales for the year 1904, for example, these reports that cannot be thus reduced, make up a total of about 603,000 7-foot to 18-foot posts, and 290,000 20-foot and up poles. This adds quite materially as you will see to the total of the sales summary. A list of wholesalers is given with summary showing those concerns that have contributed to the summary. This will give you a fair idea of the proportion of the total stocks in the country, represented in the summary. As you will see, there are some large stocks still missing. The canvass for a full report will be continued until the best possible summary can be made up.

"It was your wish last April that the canvass for green stocks put in for the year 1905 be continued throughout the year, or until every producer and wholesaler had made report. This canvass has been pursued with the same annoying relentlessness with which the others have been pushed. I am aware that this multitude of requests from the secretary's office has been burdensome to many of the members. It has been suggested that each wholesale concern provide a special clerk to take care of these demands of the association secretary, but I do not know that this has been acted on as yet by any member.

"To the request for report of sales for 1904 there have been 74 responses. To that for stocks for 1905, there were 63 responses, and to the call for dry stocks on hand Jan. 1, there were 50 responses. The fact that fifty wholesalers responded to the call within a single week, is very good proof that the cedarmen want this information and are very willing to co-operate in giving it. I wish to thank you for this promptness in this matter. I think that the members will be agreeably surprised at the showing of some of these reports.

"The plan whereby our estimate of posts and poles put in the current winter was obtained is one suggested to me at our last April meeting, and discussed previous to that time by the association. This is to divide the cedar producing territory into districts, giving to some wholesaler who is familiar with that district the task of estimating the cut of the winter there, and the cut of the previous year. This obviates the overlapping of estimates, and covers all the territory, though in a rough way. These estimates are based on average logging weather. Last year our estimate was made up from reports of individuals, each operator giving report of his own cut only. In our report at the end of the logging season, the secretary is ready to use either or both methods as the association thinks best.

"I have not been informed as to the value of one of our regular activities of the year, namely, the exchange of information as to long and short items of stock among members. But if sales have been in any fair proportion to inquiries received through the secretary's office, the result must have been of very considerable value.

"Three important committees have been called on to act during the year. In May last, our trades relations committee met a similar committee of the Lumber Secretaries' Bureau of Information, in Chicago, and formulated a reciprocal trade agreement, that was later abrogated by the retailers' associations, and nothing further has been done in the case.

"At this time there was a meeting of the railroad committee with Mr. Becker of the Western Weighing Association, to bring about a better understanding regarding the treatment of our overweight claims in his office. The result of this conference you know, and the effect of it upon the treatment of overweight claims you know. It is unnecessary to say that there is even more dissatisfaction with the treatment of our claims than before. The reason for this is that Mr. Becker, knowing that the railway weighing service is bettered since that time, believes he can take a more arbitrary stand inasmuch as he knows that we are no better informed than we were before, regarding the weight of our stock. There is a plan proposed whereby we may co-operate with the northern pine manufacturers for the handling of this matter, and I have asked Mr. Rhodes, secretary of that association, to appear before you this afternoon and explain the plan.

"The third committee whose work is to be reported is a special committee appointed to act in conjunction with the allied lumbermen's associations of the country, in bringing a complaint before the Interstate Commerce Commission, to compel the railways to make an allowance for the cost of equipping their flat or gondola cars for the carrying of lumber, and to compel them also to make allowance in weight for this equipment. Mr. E. L. Clark of Chicago, chairman of this committee, is present and will make report to the convention.

"Another matter I wish to speak of in closing is the death of two of our members during the current year. Never in the history of this association have we been called on to mourn the death in one year of two so prominent, and I might almost say, indispensable members, as our Mr. E. E. Naugle and Mr. Daniel MacGillis. Mr. Naugle, as you will remember, died in that awful railway wreck at Menton, O., and Mr. MacGillis died suddenly at his home in Milwaukee, after an illness of but two days. I am told by men intimately acquainted with these men, that each was a man whom to better know was to like and respect better. Each was both a good business man and a good friend as well as a valuable member of his community. The local members of your board of directors in both cases appointed a committee who drew up suitable resolutions expressing the sentiment of the association. Copies of these resolutions were sent you and to the press."

COMMITTEES' AND TREASURER'S REPORTS.

The committee on car stake complaints, consisting of E. L. Clark, H. S. Gilkey and H. W. Reade, reported through its chairman, Mr. Clark. He told of the convention in Chicago October 25, which he attended as representing the association, and gave his views as to the progress of the campaign. He announced that he had made a conditional pledge of $100 from the association to help the movement. This pledge was ratified by vote and the secretary was instructed to notify the secretary of the car stake association that the $100 is ready to be paid on demand.

W. B. Thomas, treasurer, presented his report. It showed cash on hand January 3, 1905, $304.86; receipts during year, $2,657.35; total, $2,962.21; disbursements, $2,213.90; balance, January 5, 1906, $748.31.

On motion of E. F. Clark a committee of three was appointed to suggest a method for compiling an eastern classification book. The chair appointed A. T. Naugle, H. S. Gilkey and George J. Backus.

An adjournment was then taken for lunch.

AFTERNOON SESSION.

The minutes of the last annual meeting and of the special meeting held in this city April 21 were read by the secretary and approved. The committee on recommendations for the eastern classification book then presented its report, as follows:

Your committee recommends that the secretary, in making his classification of freights for the states of Indiana and Ohio, be instructed to name the rate from Hermansville, also the proportional rate from Chicago to all points in the above named states, and in naming the rates for Illinois and Wisconsin to name the Hermansville rates and also the rates from the Minnesota Transfer. In naming the rates from the Minnesota Transfer we have taken into consideration the fact that a large number of cedar poles is being produced

in northwestern Minnesota along the Minnesota & International railway, and as these points have no outlet through Duluth the interests of the Minnesota shippers will be better served by giving the rates from the Minnesota Transfer than from Duluth.

The report was adopted.

President Bissell read an invitation to the association to hold its next annual meeting in Chicago at the time of the electric show and said that while the invitation seemed worth adopting it was a matter for the board of directors to determine. He introduced Mr. H. B. McMeal, editor TELEPHONY, who spoke of the advantages of meeting in Chicago during the time the electrical show was being held and tendered the association an invitation to meet at the Coliseum, Chicago, as the guests of the Electrical Trades Exposition Company. It is thought the board of directors will select Chicago as the meeting place for the next convention.

J. E. Rhodes, secretary of the Mississippii Valley Lumbermen's Association, was introduced to make a brief statement of the workings of the new bureau for the conduct of freight claims before the Western Weighing Association. He stated that excellent results had been secured in this way, reducing the number of claims and causing a reform in the method of weighing practiced formerly, as the association's inspector, J. F. Chambers, had discovered and called attention to several abuses.

H. S. Gilkey moved that the Northwestern Cedarmen's Association co-operate with the Mississippi Valley Lumbermen's Association for the next six months in handling freight claims. This was carried unanimously.

On motion of M. H. Coolidge, the press representatives were asked to submit their reports of the meeting to the secretary for approval before sending them in.

The report of the pole committee was presented by H. W. Reade, M. H. Coolidge, for the inspection committee, reported that inspectors had been called upon during the year by members in three or four cases to adjust differences, and had succeeded in each case. Similar requests from persons outside the association had been refused. The committee did not recommend any change in the present specifications.

On motion of A. T. Naugle, amended by E. L. Clark, it was voted to increase the initiation fee after July 1, next, from $25 to $100.

On motion of A. T. Naugle the association extended a vote of thanks to the secretary, M. O. Nelson, for his efficient services during the past year.

H. S. Gilkey moved that E. H. Valentine, having retired from active business, be made an honorary member of the association, and this was carried.

On motion of H. S. Gilkey a nominating committee of three was appointed to present names for officers and directors. The chair named A. T. Naugle, Hall L. Brooks and Ole Erickson as such committee. After a short recess the committee reported in favor of the following gentlemen for the offices indicated:

President—Marshall H. Coolidge.

Vice-president—P. W. Raber.

Treasurer—W. B. Thomas.

Directors for three years—A. T. Naugle and W. T. Watkins.

The report of the committee was adopted and the ballot cast for those named. President elect Coolidge took the chair and thanked the association for the honor.

On motion of W. B. Thomas a rising vote of thanks to the retiring president, M. K. Bissell, was ordered.

H. S. Gilkey was called on to give his views on the market situation. Mr. Gilkey said it was needless to state that conditions in the market were the best for a number of years, probably the best ever. Post prices have not been wholly satisfactory, but a good demand recently had reduced the surplus and prices are firmer. The outlook for business for a coming year never was better. Conditions in the woods, on the other hand, are as bad as ever known, with no freezeup until the snow came, which has left the bottoms soft, and hauling is very slow and difficult. It probably means an earlier breakup in the spring.

The association then adjourned.

The directors held a brief meeting after adjournment and re-elected M. O. Nelson as secretary for the ensuing year.

LONDON'S TELEPHONES

By A. L. Stanton

The remarks credited to Postmaster W. R. Wilcox of New York city, in which he tells Londoners "their telephone service is the worst he ever saw in any place" is partly true, but when he further says that, "there is not a Londoner who can say a good word for the telephone service," the statement is very far-fetched. In some parts of London the service is as prompt as can be desired. That there is great room for improvement is a sure thing, but look into some of the causes of these remarks not very complimentary to the telephone authorities of the world's greatest city, when it will be frankly acknowledged, the fault of bad service is not altogether with the telephone authorities. At present, telephonically speaking, London may be said to be undergoing gradual conversion into standard working, the engineering features of its equipment are at present very mixed, there being about five differing systems in use, which as every telephone man knows, involves a great deal of complication due to inter-communication details, an absolute necessity for efficient service. These details are unavoidably such as tend to cut down the rapidity of connecting through, an item which has a large effect on the handling of traffic at centers where the local calls are a very low percentage of the total. In a few years the whole of London's systems will probably be working on the well-known common battery principle, being on lines much similar to those existent in the United States. All of the large exchange centers in the Post Office and several of the National Telephone Company's are on this principle, thus, in common to the evolution of things, as time goes on, the factor of differing systems with its attendant evils for inter-communication will be eliminated. The great feature that needs attention by the British telephone user and one that has a great effect on the service, is the necessary knowledge of how to properly handle and transact business through the telephone. What is there to know? may be asked. It is simple, yet very important, study the instructions issued, act up to the spirit of them and above all pay attention to your telephone *immediately* upon being rung up. In general, the British public do not seem to take unkindly to the telephone, but certainly as yet do not realize its business value as the American does, compare the fact that New York city possesses four times the number of telephones that London does. As at present the education of the telephone user is a feature much neglected, and where proper instructions are issued, it is common to have them entirely disregarded, to the user's own disadvantage. However, it seems safe to affirm that the

British Post Office in matters telephonic are surely if slowly coming ahead with modern progress, so the time should not be very distant when Londoners may be able to say their telephone system is second to none, and by that time doubtless the public will have fully grasped the necessity of paying as much attention to the proper use of the telephone, as they would when in ill-health to their physician's advice, enhancing the efficiency, whilst enabling them to realize the true value of their service, a matter never so forcibly brought home as when a serious dislocation suspending its operation occurs.

EUROPEAN TELEPHONE CONDITIONS.

The Association of Chambers of Commerce of the United Kingdom recently passed a resolution expressing the opinion "that direct and more efficient telephonic communication should be established as soon as possible between Liverpool and other great mercantile cities of Great Britain and the principal commercial centers of Europe, the exigencies of trade requiring the utmost facility." A copy of this resolution was forwarded to the English postmaster-general, who holds out little hope that an extension of England's telephonic connections with the continent can be expected in the near future. *The Chamber of Commerce Journal,* in a summary of the postmaster-general's report, says that he fully appreciates the importance to the mercantile community of such communication, and that the subject is one to which he has given much attention. He would be glad if it were possible to afford more extended facilities, but he fears that the difficulties in connection with long distance telephony are not fully understood.

The telephone service is unlike the telegraph service in this respect. Telephonic conversation is dependent on minute variations in a small electric current; and, although a double copper wire line is used in all cases, the effect of outside disturbances and the attenuation of sound is very marked when the line extends over long distances. There is, therefore, a limit beyond which it is at present impossible to carry on conversation. The limit varies according to circumstances, the presence of a section of submarine cable having a considerable effect in shortening the limit. In the case of telegraphs it is possible to use more powerful electric currents and to insert relays in the circuit which have the effect of augmenting the current at regular distances; but neither of these alternatives is at present practicable to the same extent in the case of telephony.

Before arrangements were concluded for the use of Anglo-French and Anglo-Belgian telephone lines by subscribers outside the respective capitals, careful and prolonged experiments were made with a view to determine the maximum limits within which it was practicable to afford a reliable service between this country and France and Belgium. Since then many extensions of the service have taken place, which have been made possible chiefly through the adoption of more suitable plant on the continent; and it is now possible for communication to be obtained from Liverpool with over 100 places in France (excluding places in the immediate neighborhood of Paris) and between Liverpool and Brussels and a few other places in Belgium.

Special experiments have also been made with a view to ascertaining whether a service between Liverpool and Antwerp could not be afforded; but this was found to be impracticable. The question of telephonic communication with Holland has also been under the postmaster-general's careful consideration, but he is advised by his technical staff that under present conditions it is not practicable.

The postmaster-general believes that within the limits authorized an efficient service is already given by the post-office. In the cases of complaint which have come under his notice the difficulty has generally arisen from the use of an unsuitable form of telephone at one end or the other of the line. He is always willing to investigate cases of unsatisfactory service. The postmaster-general regrets that at present it does not seem possible for him to hold out the hope of any material extension of existing facilities; but further experiments will, from time to time, be made, and he will be glad if, by the advance of science and invention, he is able to meet the views expressed in the resolution of the association.

TELEPHONE DEVELOPMENT IN SOUTH DAKOTA.

No business enterprise in South Dakota has grown during the last ten years with more rapidity than the Independent telephone business. There are now in that state nearly nine thousand miles of line in commission, 8,890 miles according to the State Auditor's report representing a valuation of over half a million dollars, and employing an army of men and women to carry on the business. Eighteen thousand miles of wire are strung to carry messages by the telephone all over this state.

The Dakota Central Telephone Company leads in the magnitude of its business, having 3,638 miles of wire in the work, thus representing about or nearly three-fifths of the telephone mileage, and probably much more than that proportion of the telephone business of the state. There is now scarcely a hamlet, except in the more remote or thinly settled portions of the state, that is without its telephonic communication with the outside world, and most of the towns and villages of any considerable size have their own local exchanges, with rural lines reaching out over the entire trade territory adjacent. There is no state in the Union that for the population of the country has such superb service as has South Dakota, and new lines are being built as fast as men and material can be gotten to put them in.

THE TELEPHONE MANNER.

"Most everyone has a telephone manner," said a man of observation. "I know men who talk in the most ordinary way in common conversation, yet as soon as they begin to speak over the telephone they assume an air of grandeur. They are polite to a point of excess and they use the most stilted expressions. I can't account for it unless they wish to take advantage of the fact that the person at the other end cannot see them and they wish to make an impression. But that will not always hold good, for they talk to their intimate friends in the same way.

"This excessive politeness is not as bad, however, as rudeness over the telephone, for that should not be tolerated. The man who answers the telephone in a business establishment should be the most polite and even-tempered man in the house. You never know who is at the other end of the line when the bell rings, and it pays to be civil. Many a young man has been discharged for speaking roughly to his employer over the telephone.

"I have known of many cases where persons have shown what I call telephone bravery. They would be very meek before the face of the other person, yet they talk in the most arrogant manner when the words were being carried over the wires. When a man is talking over the telephone his personality and appearance are not in evidence, and the smallest office boy can often have the most fiery arguments with the biggest and most imposing bank president."

KANSAS TELEPHONE CONVENTION.

The annual meeting of the Kansas Independent Telephone Association was held at Wichita, Kansas, on January 23 and 24. The Kansas meetings are always enthusiastic and this one was no exception, telephone men being present from all over the state. The manufacturing interests were well represented also, and the meeting in every way was an unqualified success.

DECISIONS AFFECTING TELEPHONY

By Gilbert W. Hand

CONTRACT MADE OVER TELEPHONE BETWEEN PARTIES IN DIFFERENT COUNTIES HELD TO BE MADE IN THAT COUNTY IN WHICH A CONTRACT IS TO BE PERFORMED.

THE Sperry Flour Company is a California corporation having its prinicpal place of business in San Francisco. The bank of Yolo does business in Yolo county of said state. A disagreement ending in litigation between these parties over the liability of defendant to pay plaintiff certain moneys as a consequence of having honored a draft ended in litigation between these parties. The suit was brought by the bank in Yolo county. The defendant thereupon made a motion to change the place of the suit to San Francisco, citing as authority the constitutional provision of the state authorizing actions to be commenced in the county where the contract is made or where the contract is to be performed. (Const. Art. 12, No. 16.) This motion was overruled. The evidence produced by defendant was to the effect that the contract was neither made in Yolo county or to be performed there, but it was further shown that the cashier of plaintiff in Woodland in Yolo county, called up the agent of defendant at Sacramento by telephone and in effect offered to advance a certain sum of money to the purchaser of a lot of wheat if defendant would agree to honor his draft for $1,400; to this proposition the agent of defendant answered by telephone that they would honor the draft. The court said: "We have only to determine whether the contract alleged, if made at all, was made in Yolo county; or, if not made there, was to be performed there." We are inclined to hold upon the facts stated that in legal contemplation the contract was made in Sacramento county. A contract is supposed to be made at some place and the place where it becomes complete is the place where it is made. If a contract is made by a change of letters or a telegram, it is held to have been made at the place where the letter is mailed or the telegram filed containing an unconditional acceptance by one party of the offer of the other. If the communications are oral, either with or without the telephone, between parties on opposite sides of the party line the same principal would seem to require that the contract should be deemed to have been made in the county where the offer of one is accepted by the other,—in this case, in Sacramento but, if the contract was to be performed in Yolo county, the action was rightly commenced there wherever it is made, and we think the place of performance was in Yolo county. * * * In a suit upon the contract of a corporation where no place of performance is expressly stipulated it ought to be held performable in the place where the circumstances, viewed in the light of code provisions indicate that the parties expected it to be performed." The Supreme Court of California therefore held that the suit was properly begun in Yolo county where the bank is situated.

Bank of Yolo v. Sperry Flour Company, 65 L. R. A., 90.

IN WISCONSIN LICENSE FEES FOR POLES CANNOT BE COLLECTED IF AMOUNT ASSESSED IS GREATER THAN ACTUAL EXPENSE OF POLICE REGULATIONS.

The readers of TELEPHONY will recall that in this department at various times the question of the legality of license fees on telephone poles which have been assessed by municipalities and rural districts through which they pass has been discussed. The Wisconsin courts have lately had this question before them and the ruling in this state is in accordance with the general rule on the subject. The cases most widely reported on this question have come from Pennsylvania and several of them have been carried to the United States Supreme Court for its decision and the ruling has been that such assessments are legal and valid and may be collected provided the amount does not exceed the actual expense of police regulation. If it can be shown that the money thus demanded is merely to compensate for the actual expense of supervising and regulating the location and care of poles and wires then the assessment is lawful and is not open to the objection of being double taxation.

The Wisconsin Supreme Court used the following language in disposing of a case recently before it in which the question of the validity of an alleged license tax on the poles and wires of the Wisconsin Telephone Company was at issue:

"But we will not further extend the discussion of the cases cited by respondent, the city of Milwaukee. It is manifest they do not support the proposition that the defendant has authority to exact a license such as is provided for in the ordinance in question. The power rests in the state to determine what occupation shall be licensed. And it is not claimed that any power has been granted to defendant by the legislature to license the plaintiff, nor is it claimed that the plaintiff has failed to comply with all regulations respecting its use of the streets, or that it has violated the law granting it the right to occupy the streets by obstructing or in any manner interfering with the public use of the streets of defendant. And, no power having been relegated to defendant to license plaintiff, it could not exact a license fee as a means of raising revenue. But it is claimed that the ordinance is a regulation, and not a revenue measure, and that it may be sustained upon the theory that the defendant has the right to impose such fee for supervision and inspection under the police power. Whether the city has power to impose any fee upon the plaintiff for inspection and supervision, is not necessary to decide, and we do not decide, in this case, because it is clear that the ordinance was passed for no such purpose, but, on the contrary, was an attempt to charge plaintiff for the privilege of maintaining its poles and wires in the streets. If the city had power to grant any privileges in the streets to the plaintiff, or had expressed authority from the Legislature to license the plaintiff so as to bring its case within the authorities cited, the respondent's position would be quite different. But, as before observed, the defendant had no right or privilege to grant to the plaintiff, and no power to prevent its use of the streets in a reasonable manner consistent with the public use, and the provisions of the ordinance set out in the statement of facts show that it is a revenue measure, and not a regulation.

The ordinance requires telephone and telegraph companies to apply annually for a license to maintain, for the ensuing year, the poles and cross-arms then erected, and provides for payment, for the use of the city, of one dollar for each and every pole authorized to be maintained thereby. The ordinance further provides that all revenue derived from such license shall become part of the general city fund, and imposes a penalty for any violation, and further provides that the erection or maintenance of any single pole or cross-arm in violation of the provisions thereof shall constitute a distinctly and separate offense thereunder. The plain import of this ordinance is that it grants the privilege to telephone and telegraph companies to occupy the streets of defendant city with their poles and cross-arms in consid-

eration of the license fee exacted. There is nothing in the ordinance indicating that the fee is exacted for inspection or supervision, or that it will be used for such purpose, or that any such amount is necessary to defray the expense of such inspection and supervision, and it is quite obvious that the aggregate amount sought to be collected would be far beyond the reasonable expense of such inspection and supervision. We think it safe to say that any reasonable cost of inspection or supervision would not exceed one-tenth of the revenue chargeable, according to the terms of the ordinance. True, where the power to license exists, a reasonable discretion is vested in the municipality, but courts have a right to look into ordinances with a view of determining whether they are passed for the purpose of revenue, although sought to be upheld as police regulations. Even if the city had the right to impose reasonable charges for inspection and supervision, it should not be permitted under the guise of such power to collect large amounts of revenue for the benefit of the city regardless of the amount necessary for such inspection and supervision. And, where the court can clearly see that revenue and not regulation is the aim and not the incident, and no power is given to license the occupation, the ordinance is void.

Wisconsin Telephone Company v. City of Milwaukee, 104 N. W. 1009.

PRESUMPTION AS TO PURPOSE OF CONDEMNATION PROCEEDINGS.

A railroad case recently decided by the supreme court of Alabama contains a discussion of the above question. One railroad was seeking to condemn a right-of-way over another and beyond the point originally decided upon as a terminus by the former, and it was attempted to show that the first mentioned company was seeking to extend its line for private benefit and not for public use beyond such terminal. The Court held that it was a presumption of law that in such proceedings the party condemning land was acting for the purpose of serving the public and not for private benefit. The court did not go so far as to say that it could not be shown that the reverse would not deny the right of condemnation, merely that the presumption of law in such case is that the public service corporation is acting in good faith and for a public purpose. This ruling is equally applicable to telephone companies in those jurisdictions where the right of eminent domain is conferred upon them.

Central of Georgia Railway Company v. Union Springs Northern Railway Company, 39 Southern 473.

DAMAGES FOR FAILURE TO DELIVER MESSAGE GOVERNED BY LAWS OF STATE IN WHICH MESSAGE IS DELIVERED.

In a case in which the Western Union Telegraph Company was a party before the South Carolina courts the facts were that a party in Florida had sent a message to one in South Carolina and a controversy resulting in a suit for damages arose. One of the questions presented was whether the rule of damages to be applied was that of Georgia from which the message came or that of South Carolina to which it was sent. The South Carolina Supreme Court held that the correct rule to be applied was that of the state in which the telegram was received and in which the action was brought and not that of Florida, the foreign state from which the message came.

Hughes v. Western Union Telegraph Company, 52 S. E. 107.

MODERN TELEPHONY IN THEORY AND PRACTICE

The Thirteenth Installment of a Series of Articles

By W. H. Radcliffe

CONSIDERATIONS IN THE MANAGEMENT OF AN EXCHANGE.

THERE are three standard forms of contracts in common use by the telephone companies, any one or all of which may be offered to the public for consideration. They are known respectively as the message rate, the flat rate, and the pay station contract.

The message rate contract limits the subscriber to a certain number of messages per year, for which he pays a fixed sum. If the stated number is exceeded, however, the additional messages are charged against him at a certain rate per message; on the other hand, if he has not made the number of calls allowed him a rebate is given at the end of the year.

The flat rate contract permits unlimited use of a telephone for one year. The amount charged for this privilege is, of course, greater than that required in a message rate contract.

The pay station contract, intended for the accommodation of the general public, is usually made with the proprietor of some public building, such as a store or hotel. A certain price is charged the public for each call sent in through the instrument thus located and is collected from the sender by the proprietor, who in return is allowed a certain percentage on each call after a certain number have been recorded.

From the natures of the contracts, it is evident that in some forms it is necessary for the operators to keep account of the number of calls sent in; it is also essential, in certain cases, to record the subscribers connected and note the lengths of time occupied in transmitting the messages. Thus in the message rate contract, the number of calls are counted but are not recorded or timed; in a flat rate contract the messages are neither counted, recorded, nor timed, but in a pay station contract it is essential that all messages be recorded together with the length of time occupied by each one. All messages to distant points, however, must be sent over toll lines and these, regardless of their origin, are recorded and timed by the toll operator.

The successful operation of a modern exchange supplying service to 3,000 or more subscribers necessitates a working force of considerable size. The various positions to be filled are those of the subscriber operators, monitor, chief operator, trunk operators, toll operators, chief toll operator, trouble clerk, chief inspector, engineer, superintendent of construction, general manager and president. The duties accompanying each of these positions are usually defined in the constitution and by-laws of the telephone company; they are generally as follows:

The subscriber operators' duties in establishing connections have already been given in the descriptions of the various types of switchboards. It has been generally conceded that these duties can be performed more satisfactorily by women than by men. The superiority of the former over the latter is due to the higher pitch of the female voice

which causes the transmitter diaphragm to respond more accurately, to a clearer enunciation, to a better choice of words and to a greater amount of patience in dealing with the subscribers. On account of these qualities inherent in the weaker sex, all the large telephone companies both in Europe and America employ women as telephone operators. Those women who possess in addition to the qualities previously mentioned, a good memory, good hearing, endurance, a willingness to obey orders and a sympathetic nature, succeed best in this capacity. The principal aim of every telephone employe should be the advancement of the company's interests, for the company's interests and those of the employes are one and the same in that failure of the former cannot bring success to the latter. The success or failure of a telephone company depends to a great extent upon the service offered the public and in this the operators, more than any of the rest of the staff, are responsible, so that the proper performance of the duties associated with this position is of prime importance. The maintenance cost of the switchboard will be governed largely by the class of operators employed. If the operators are generally careless in their work, removing the connections by pulling the cords instead of the plugs, leaving their head receivers when not in use lying around, and tampering with the keys and other apparatus of the board, the increased expense of maintenance alone may more than overbalance any saving in salaries. Occasionally, an operator may be tempted through some personal motive, to listen in on a conversation and perchance repeat it to outside parties. Lest the operators indulge in this practice it is well to warn them in advance that this demeanor is punishable by law, the courts having decreed that a telephone message must be afforded the same secrecy by the operators as in the case of a message sent by telegraph.

The monitor supervises the work of the subscriber operators; she does this, listening in on their connections from time to time by switching her head receiver into the various circuits. Being located at a separate desk suitably wired she is able to listen in without her motions being followed by the operators, so that their respective efficiencies are easily obtained. All questions asked by subscribers and all complaints made by them are referred to her; she must, therefore, be well informed regarding service connections. During the rush hours she may also be obliged to assist the operators by making the more difficult connections herself, although the operators themselves should relieve each other as much as possible in case certain of them become overcrowded with calls.

The duties of the chief operator are such that from a certain standpoint she may be looked upon as assistant manager. She has complete charge of all the operators, regulating their hours of service and in some instances hiring and discharging them at will. She, furthermore, keeps a record of all troubles occurring in the wiring within the exchange, and in this way has a certain supervision over the trouble clerk. The toll business conducted in the exchange is also under her charge, so that while her duties are somewhat similar to those of the monitor, they are at the same time considerably more extended.

The trunk operator at each exchange answers the calls from subscriber operators at other exchanges. There are two classes of trunk operators known, respectively, as ring-down trunk operators and circuit trunk operators. The former receive the subscriber's call, through the subscriber operator, over a common trunk line which terminates in a magnetic drop in the trunk operator's section; the drop is similar to that on a subscriber's line and is actuated by the subscriber operator's ringing current. This method is employed where transfer switchboards are used. The latter type of trunk operators receive the subscriber's call, through the subscriber operator, over a special order wire which terminates in a key at the subscriber operator's section and runs to the head receiver of the trunk operator; this method is employed where multiple switchboards are used. Trunk operators of both classes are provided with sets of connecting cords, and trunk jacks to the number of about thirty per operator are mounted on the face of the board; by means of these they handle a trunked connection as if it came from a local subscriber. In all cases, however, the subscriber operator in the originating office supervises the connection and informs the trunk operator when to remove her connections. She does this by ringing on the common trunk line and thus throwing the magnetic drop in the distant exchange when the transfer switchboard is used, or by speaking to the trunk operator over the order wire in case the bridging board is employed.

The toll operators handle all connections on trunk lines which extend outside a city. The toll board is generally placed in the exchange nearest to the territory covered by these long trunk lines, or toll lines as they are called, and if designed for more than one operator is of the multiple type; it contains simply the incoming trunk lines and the outgoing trunk lines to the other offices, all of which end in jacks placed in the face of the board. The outgoing trunk lines are multipled in each section, and the toll operator's connecting circuits are identical with those of the subscriber operators previously described. It has already been mentioned that all messages sent over toll lines are recorded and timed. The recording, which consists in writing down the number of the subscriber or name of the person calling and the number of the subscriber called, is done by an operator stationed near the toll board whose receiver is connected with the order wires from the various exchanges. The time at which the conversation is commenced, and that at which it is finished, are noted by the toll operator who completes the connection by aid of her order wire to the trunk operator from whom the call was sent and by aid of a ring-down trunk line to the exchange required.

The chief toll operator holds the same position relatively to the toll operators that the chief operator does to the subscriber operators. She must, therefore, possess a perfect understanding of the entire toll system and be familiar with the various exchanges to which the toll lines are connected.

The duties of the trouble clerk are to record and test all cases of trouble that arise in the wire plant. It is also his duty to assign to the troublemen whatever work may be necessary to remedy a defect, and to facilitate this he should keep full records of all the wires and cables of the exchange. The trouble clerk is simply provided with a portable telephone set, and his only authority consists in reporting to his superior, the chief inspector, those troublemen who are incapable of properly performing their work.

The chief inspector, or wire chief as he is sometimes called, has charge of the power plant and also supervision of the switchboard. He plans all the necessary house wiring, has charge of the line or cable testing, and of all galvanometer work. The troublemen and wiremen are under his charge and he is often consulted regarding the practicability of methods for improving the efficiency of the service.

The engineer's position, although somewhat similar to that of the chief inspector, is at the same time far more extended. Besides planning the construction of the exchange and its equipment, together with that of the outside line circuits, he is also required to test the materials used. Afterward, he is held responsible for their satisfactory performance. The directors of the company usually consult him for any information they may wish regarding the operation of the exchange. It is evident, therefore, that the telephone engineer should possess a thorough technical training and a considerable amount of practical experience.

The superintendent of construction has supervision of all work done outside the exchange and must, consequently, be

familiar with the conditions of all line wires and cables. He is also given the authority to hire and discharge all men engaged on outside construction.

The general manager is the public representative of the company. The reports of the various departments are made to him, and over each department he has a general supervision. He must, therefore, keep in touch with the usual routine of work carried on in each branch of the exchange, although he need not necessarily be familiar with the various details. Whenever supplies or materials are needed they are ordered through him, consequently, he is of great assistance to the president in managing the financial affairs of the company.

The president, occupying the highest position of authority, has a general supervision of everything in connection with the exchange. Whatever orders he desires to enforce are given to the heads of the various departments. His actions to a great extent are governed by the board of directors, among whom he acts as chairman. It frequently happens that he holds a majority of the stock of the concern, but whether this be the case or not, he is looked upon as the financial head of the company.

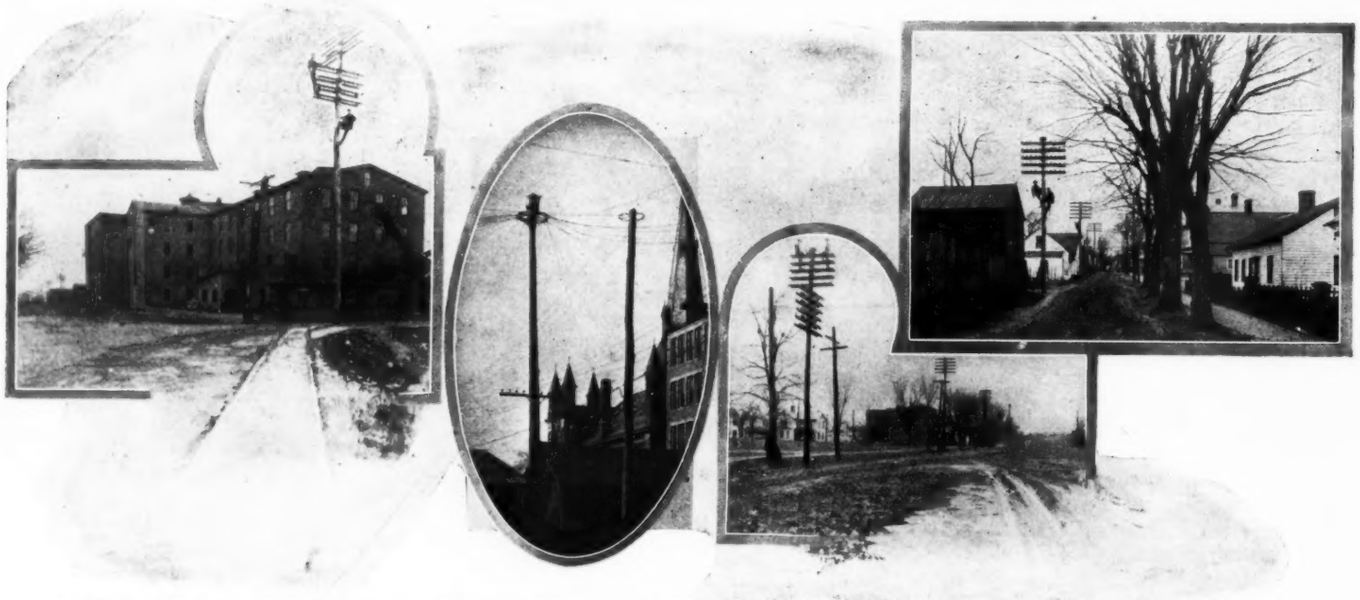
THE OLDEST WEST VIRGINIA INDEPENDENT TELEPHONE COMPANY

By Earl C. Long

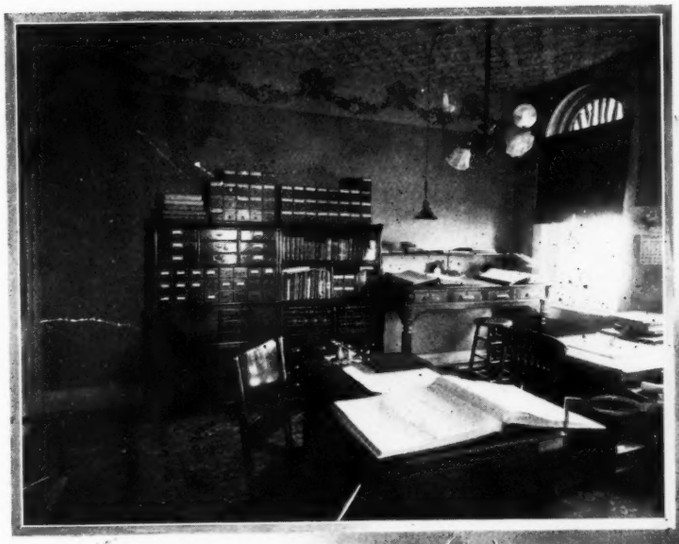
THE West Virginia Western Telephone Company was incorporated on February 22, 1898, and embarked in the Independent telephone business, with headquarters at West Union, Doddridge county, by purchasing the lines of the United Telephone Company in the counties of Doddridge, Tyler, Ritchie, Wetzel and a part of those in Lewis, Harrison and Gilmer. It also acquired the lines operated by the Ritchie and Tyler Telephone Company and the Independent Telephone Company of Tyler county. These various lines had been built in the years from 1893 to 1899, so that the West Virginia Western Telephone Company is, by succession, the oldest Independent company in the state. In February, 1899, the general office of the company was removed from West Union to Parkersburg. The building of an exchange in Parkersburg was immediately begun under the supervision of H. K. Cole of Owensboro, Kentucky, and was completed and open for business on the 17th day of November, 1899, with about three hundred telephones in service.

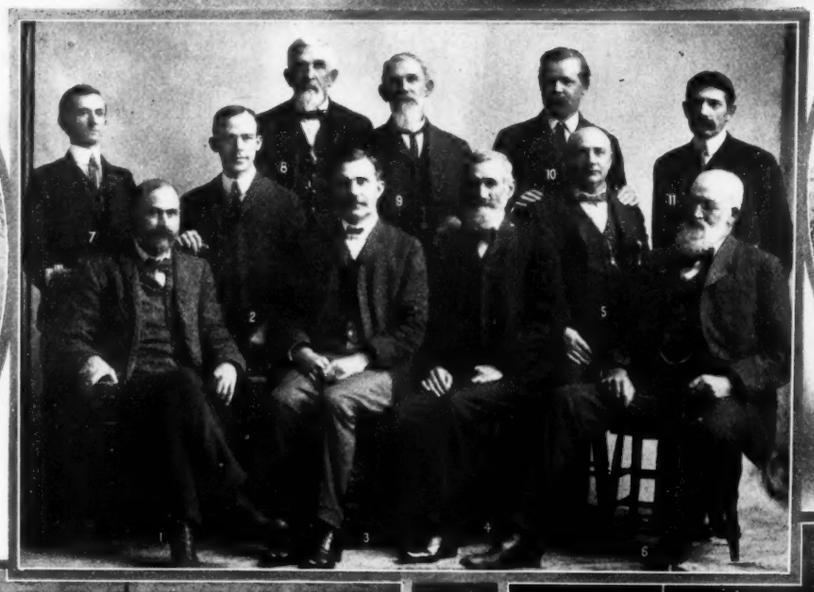
At that time the Central District and Printing Telegraph Company (Bell) was and had for several years been operating an exchange in Parkersburg, having at the time about three hundred telephones in service. Before the West Virginia company obtained its franchise in the city of Parkersburg the Bell rates were excessive, but on the granting of an Independent franchise, the Bell immediately reduced its rates $3.00 less than the Independent company's rate for all classes of service. The Independent company disregarded the cut rates of the opposition and plodded on as best it could in the face of active warfare by its competitor, and by the fall of 1902 had about eight hundred telephones in service in the city. The Bell had approximately the same number and had in the meantime entirely rebuilt its plant; putting in a first-class common battery muliple switchboard and replacing much of its open work with new underground and aerial cable. Having had up to that time no underground and very little aerial cable.

On September 1, 1902, the Bell company served notice upon its patrons that after sixty days its rates would be restored to its former excessive prices. The effect was electrical. An indignation meeting was held at the court house, the mayor presiding; resolutions were adopted condemning the Bell company, refusing to patronize it in the future and pledging support to the home company. These agreements were so generally signed that it at once became apparent that the West Virginia company's plant, the ultimate



South Seventh St., Marietta, Ohio. Parkersburg Distributing Pole. Mulberry Street, Marietta, Ohio. East Washington Street, Marietta, Ohio.





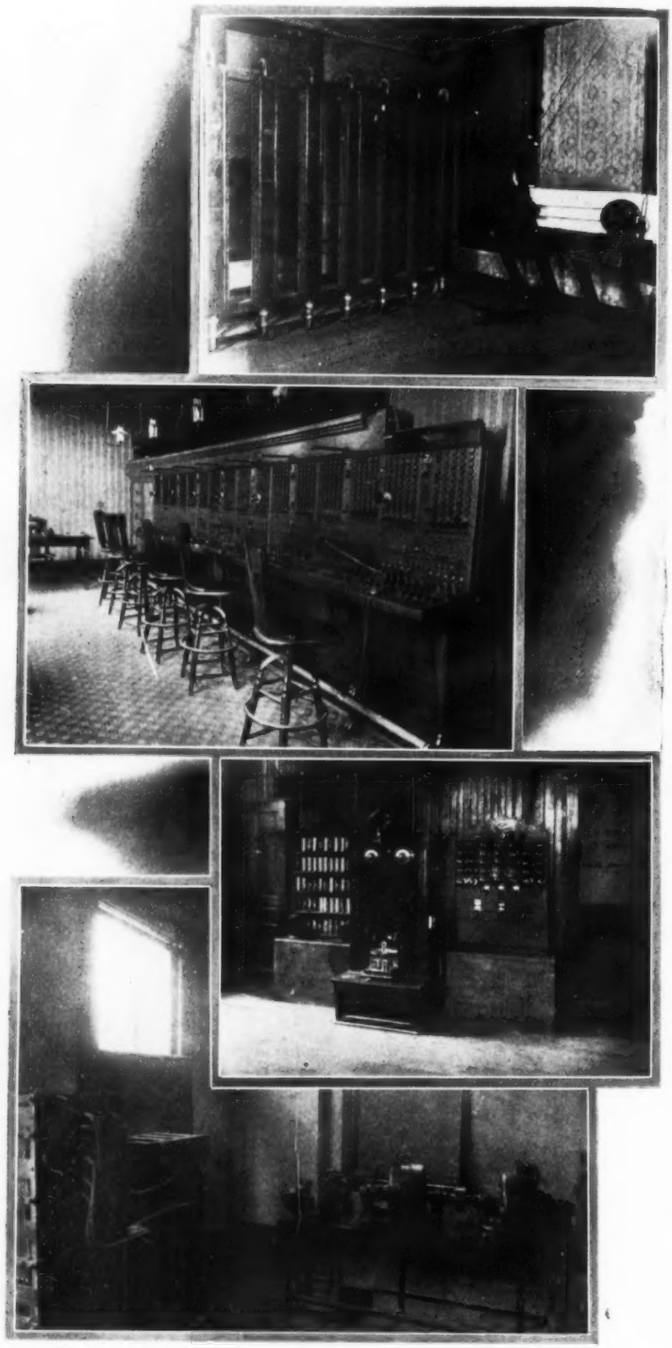
General Office.
Toll Line Entering City.
Business Office, Parkersburg.

Directors.

Parkersburg Telephone Building.
Showing Aerial Construction.
Main Switchboard, Parkersburg.

capacity of which, being only 1,200, was utterly inadequate to meet the sudden and unexpected demands thus made upon it, and steps were immediately taken to re-construct and enlarge it.

The first switchboard installed in the city was a common battery multiple visual board, of the Stromberg-Carlson make, the power machines were of the Wagoner make, and the terminal apparatus was Sterling make. The best material obtainable was used throughout its construction. The underground system covering the business district within a radius of three miles. The pole leads were all of Michigan



Marietta, Ohio, Terminal Room.
Marietta, Ohio, Central Office Switchboard.
Marietta, Ohio, Power Room.
Parkersburg Charging Machines.

cedar and the cables of No. 20 double wrap paper of the Roebling make. The plant when completed was as modern as any in the whole country, and its service could not have well been improved upon, but the growing list of subscribers made a larger plant imperative, so a contract was immediately made with the Stromberg-Carlson Telephone Manufacturing Company for the installation of a switchboard of the latest and most improved type, with 1,800 lines installed and an ultimate capacity of 3,200 lines. By May 1, 1903, the new board was fully installed with 1,350 telephones working, and many contracts on the waiting list. Since that time the company has never caught up with its installation, and many contracts are constantly on the waiting list. The number of telephones now in service in the city is over 2,300, and this in a city of only about 20,000 population.

In the meantime the energies of the company had not all been expended on Parkersburg, but new exchanges had been built in smaller towns; new toll lines built and numerous connections and traffic arrangements made with other companies. The principal exchanges owned and operated by the company outside of Parkersburg are at West Union, Pennsboro, Harrisville, Ellenboro, Cairo, Auburn, Sistersville and Williamstown. With Sistersville now being rebuilt and Friendly building. The principal connections are with the Consolidated Telephone Company operating at Clarksburg, Fairmont, Grafton, Philippi, Elkins, Beverly and surrounding territory. The Ravenswood Telephone Company, with exchanges at Bellville, Ravenswood, Spencer and Ripley; The United Telephone Company, in Pleasants county, with exchanges at St. Marys and Goose Creek; The Home Telephone Company, with exchanges at Belpre, Coolville and covering the southern portion of Washington county, Ohio, and extending southward and westward to Pomeroy and Athens; The Weston Central Telephone Company, covering a part of Lewis, Braxton, Gilmer and Calhoun counties; the Beeghley Telephone Company, having exchanges at Weston and at many other points in Harrison and Lewis counties; the Enterprise Telephone Company, with an exchange at New Martinsville and extensive system in Wetzel county, and numerous smaller companies of the counties of Wood, Ritchie, Calhoun, Gilmer, Tyler, Braxton, Wirt and Jackson. The companies directly connected with the West Virginia Western Telephone Company operate 9,200 telephones.

In July, 1903, the company acquired the controlling interest in the Marietta Telephone Company, of Marietta, Ohio, which covers practically all of Washington county, and is now constructing a toll line up the Ohio river to connect opposite Sistersville with the National Telephone Company, of Wheeling, West Virginia, thus furnishing direct line to Moundsville, Wheeling, Bellaire, Martinsferry, Bridgeport, Benwood, Washington, and Pittsburg.

The Marietta exchange consists of an 800-line Sterling Electric Company switchboard, Sterling terminals with complete power plant and ringing apparatus. The outside construction is substantially built. The business district being all underground. The construction of the plant is shown in the accompanying illustrations.

The prominent spirits in the Independent telephone movement in Marietta are A. L. Gracey, W. H. H. Jett, and J. S. H. Toerner. Mr. Gracey, president of the company, whose portrait is herewith shown, is a leading oil operator, vice-president of the German National Bank, and director of the Parkersburg, Marietta and Inter-Urban Railway Company, and prominently connected with many banks and business institutions in and about the city of Marietta.

The illustrations herewith presented will give an idea of the construction of the present Parkersburg plant.

The main central office switchboard is of the common battery; lamp line multiple type. Each position is equipped with 160 lines with lamp line signals, answering jacks, pilot lamps, sixteen-cord circuits with double supervisory lamps, multiple jacks, etc. The main distributing frame, relay frame, and intermediate distributing frame are all of

angle iron and well and substantially made. The lightning arrestors and terminal apparatus being of the Cook make. The power plant consists of a duplicate set of storage batteries manufactured by the Electric Storage Battery Company of Philadelphia, one Wagner machine, direct motor and generator gear, one rheostat used to reduce 650-volt direct current to requirements of battery; three ringing machines, one driven by storage battery, one by 110-volt alternative current, and one Warner pole changer, one chief operator, monitor's desk, and wire chief's desk. The toll board is located in an adjoining office from the main exchange, and is a two-position board, with an ultimate capacity of 200. One hundred lines are now installed. duplicate of the toll board is also established in the annex position of the central office switchboard; by this arrangement the long-distance calls are handled by the operators on main switch from 11 p. m. until 6:30 a. m., thus avoiding the expense of an all-night toll operator. The city is well-laid out and the multiple method of cable distribution is used. No open construction is found in the business district.

The total number of telephones operated by the West Virginia company at this date is 4,663, and with the enlargement of Sistersville and the building of other exchanges contemplated the number of telephones will be approaching 5,500. Added to this the company has direct connection with 9,200 telephones (as heretofore stated) in West Virginia, and direct connection with about 1,500 in Ohio, and indirect connection through the United States Telephone Company with the whole state of Ohio, and also with a large majority of the Independent telephones in West Virginia numbering 40,000.

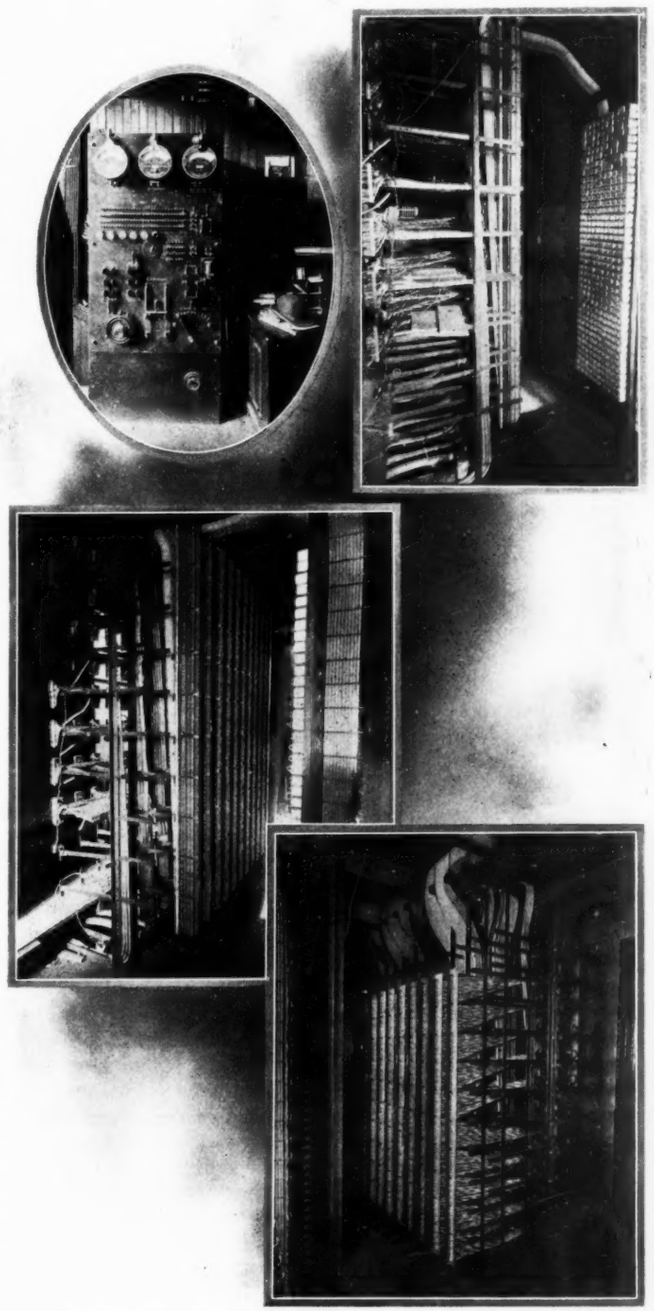
The present officials and directors of the company are: J. H. Lininger, president; J. E. Carle, vice-president; R. H. Rutherford, secretary; C. T. Hiteshew, treasurer; A. C. Davis, general manager; Robert H. Browse; G. D. Jeffers, Ben S. Pope, J. P. Sharp, Richard Wanless and H. G. Feller.

In the illustration Mr. Lininger is marked (1), Hiteschew (2), Pope (3), Wanless (4), Filler (5), Browse (6), Davis (7), Carle (8), Sharp (9), Rutherford (10), and Jeffers (11).

This is generally recognized as being a strong and able directory, and several of its members have been connected officially with the company almost since its organization. Notably Carle, Davis, Rutherford and Lininger. Mr. Lininger is cashier of the People's Bank at Harrisville, West Virginia, and an official of several other corporations. Mr. Carl is a leading farmer, stock raiser and oil producer of Wood county. Mr. Rutherford is general manager of the Oakland Pressed Brick Company, of Zanesville, Ohio. Mr. Hiteshew is cashier of the Farmers' and Mechanics' National Bank, of Parkersburg. Mr. Davis devotes his attention entirely to the telephone business and besides having the active management of this company and the Marietta Telephone Company, is a director of several other telephone companies, and is secretary of the West Virginia Independent Telephone Association, and one of the best-known telephone men in West Virginia. Mr. Wanless is the president of the Bank of Cairo, of Cairo, West Virginia. Mr. Browse is capitalist and vice-president of the Pleasants County Bank, of St. Marys, West Virginia, and a director in several corporations in Wheeling and elsewhere. Mr. Feller is director of the First National Bank, of St. Marys. Mr. Sharp is a farmer and interested in several business enterprises in all of which he is valued for his conservatism and good judgment. Dr. Jeffers is one of the leading physicians of the city of Parkersburg, and a prominent business man. Mr. Pope is a leading timber dealer and president of the Commercial Banking and Trust Company, of Parkersburg.

The growth, health and expansion of this company has been remarkable since its formation. The earnings are satisfactory and are showing a steady and healthy gain. The stockholders of the company seem to be satisfied with its management. The directors are elected from year to year by practically a unanimous vote.

The conditions that prevail in the territory of the West



Parkersburg Power Board. Relay Rack.

Cross Connecting Rack. Intermediate Distributing Board.

Virginia company will be found pretty much the same throughout the state. The Independents begun in a small way and are growing stronger and stronger year by year, out numbering their opponents about ten to one throughout the territory and are only surpassed by them in long-distance connection. These are being built as fast as money and labor can do the work. From an Independent telephone standpoint West Virginia is making very satisfactory progress.

CONCERNING TELEPHONE MAINTENANCE

This Article Continues the Description of Sub-Station Equipment

By Samuel G. McMeen

IN AN exact and rigid definition, the wiring of a substation may be considered to be a part of the line rather than of the equipment. In commercial practice, however, the placing and caring for the apparatus in the subscriber's station naturally includes the placing and caring for the wiring of that apparatus. In the category of substation equipment, therefore, may fall not only the wiring from the line outside of the building, inward toward and to the telephone, through the protective device for the instrument, but the wiring from this device to ground or from the telephone to ground, if the conditions of the circuit require the latter.

There are several reasons why a protective device should be associated with a subscriber's telephone, and these reasons are more or less effective in various circumstances. Roughly speaking, the reasons may be said to be these:

To protect the telephone instrument from damage by lightning and consequent expense to the owner for material and labor to effect repairs.

To protect the telephone from damage by too strong currents brought in over the line from power wires without any consequent expense to the owner for material and labor to effect repairs.

To protect the user and the owner of the telephone against loss of value by loss of use of the telephone during the time it is out of service while damaged.

To protect the user or other person from injury due to lightning or other currents entering the premises over the telephone wires.

To protect the owner or occupant of the premises against loss from the destruction of the premises by fire, or other hurtful result, from currents entering the premises over the line.

In the broadest view of things there is always the possibility that any station may have hurtful currents brought into it because of one or more of the mentioned troubles but it is a station connected to an aerial line which is far more likely to suffer in that way. An equipment connected to a central office by means of wires which are wholly underground, with present methods of building underground systems, is practically so free from any danger of electrical damage that it is not considered advisable practice to equip such a station with protective devices or arrestors at all. In order that the safety in these circumstances may be complete, however, it is necessary that the inside wiring be run in such a way as to have it as safe from contact with heavy current wires in the building as are the wires in the underground system outside. There is no particular difficulty in this if reasonable precautions are followed, and the code of the National Board of Fire Underwriters will be found sufficiently explicit to form a good basis of operations.

In order to determine whether the stations of a given telephone system shall be equipped with protective devices or arrestors, as they will be called here, it is necessary to weigh all the circumstances against each other. Some policy should develop from careful thought concerning these circumstances, so that other cases which require to be studied can be decided with less labor than that which is required in originally making up one's mind on the subject.

So far, there has been little legislation of a kind designed to compel telephone companies to install protective devices. In certain states, bills have been introduced in legislatures, but no general results have ensued. The regulations imposed by ordinances in cities and towns are usually of such a general character as to afford little guidance in this particular, and it may be said that city electricians, or equivalent officers, as a rule, are guided more by the code of the National Board than by any other recorded thought.

As there is no general compulsion of law, the policy of a company must be determined by the economics of the situation as its officers are able to determine them. The more stations operated by a single company, the greater is the possibility of that company being able to afford to do without arrestors in its substations. At present prices of arrestors, and average cost of placing and maintaining them, the expense of insuring the company's interest in its station should not exceed twenty cents per station per year. Just as there are large manufacturers who carry their own insurance, so a large telephone company may be able to prove that it can afford to leave its stations unequipped with arrestors, because its loss in a given time will not equal the cost for the same time of owning, placing and maintaining arrestor equipment in its stations. It is not to be overlooked, however, that in shaping a general policy in this regard, the company must set aside to be well considered the possible damage to human life and person, which the financial measure of damages assessed can not restore.

There must also be considered the probability of compulsory legislation relative to arrestors, and the possibility of the effect of more stringent insurance rules, so that a decision may be reached by the company for its own purposes of policy as to whether arrestors should be installed generally now, or be left out until such other facts arise as shall make it seem wise to install them.

The choice of arrestor type for use with a given kind of substation equipment may be said to depend on whether there is a condenser in series with the ringer of that equipment while the receiver is on the hook. If a condenser is so used, as is common practice in central energy systems, the arrester needs only to contain carbon blocks and fuses. These will have such relations to each other, to the line and to the instruments, as are shown in figure 1.

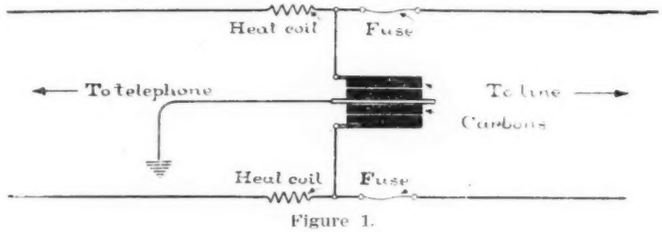


Figure 1.

If there be no condenser in series with the ringer, there will be a path over which direct current may flow in quantity much greater than if the condenser were present, and in such a case, unless the resistance of the ringer by very high indeed, the arrangement of parts shown in figure 2 is much to be preferred.

The location of the arrestor should be near the point of entrance of the wires into the building, and may be either just inside that entrance, or just outside of it. This must be determined by the particular type of arrestor adopted for

use, and by determining whether that type, if installed within the building, will accomplish all the requirements of rules which the policy undertakes to cover.

Whether the arrestor be inside or outside of the building, a ground wire should be run from it with as great directness and security as possible, and its connection to the earth must be undoubted. By directness is meant that the ground wires shall be as straight as possible, and shall have in them absolutely no twists or turns, such as used to be familiar in signal wiring of all kinds. High potential discharges, such as lightning, are enormously retarded by the impedance

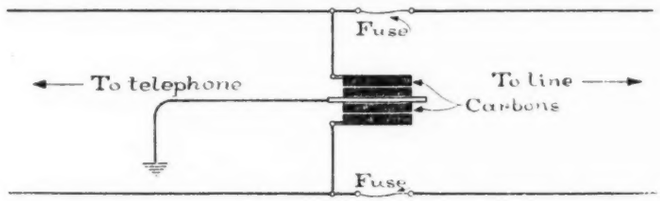


Figure 2.

of such turns and the usefulness of the entire arrestor equipment is very greatly reduced, if not indeed sometimes eliminated, by such wiring.

GROUND WIRES.

Irrespective of arrestor equipment, there are two forms of circuits which require ground wires at the substations. One is the original grounded circuit, where only one wire goes to the station and leads through the telephone to the ground; the other is the class of party line equipment which signals from one or the other side of the line to ground.

In either of these cases, it is essential that the ground be well run and well connected. It is further necessary that, however well connected the actual ground wire may be, the thing to which it joins must be thoroughly connected with the earth. This latter condition is not easy to secure, and in common practice it is ordinarily accomplished by connecting the ground wire to a gas pipe, to a water pipe, or to a rod driven in the earth. These three ground-connecting things are probably reliable in the order mentioned. The advantage possessed by the water pipe is not so much in its usually greater diameter, but in the fact that its joints are not so likely to offer insulation between the point of connection to the pipe in the building and the real earth outside. If an intentionally insulating joint were placed in the pipe, the water within it would bridge that joint so as to enable the pipe, including the water within it, to serve as a ground connection.

Gas pipes are to be regarded with suspicion to the extent that the ground wire shall be attached to them at a point near the entrance of the pipe to the building, and between that entrance and the gas meter.

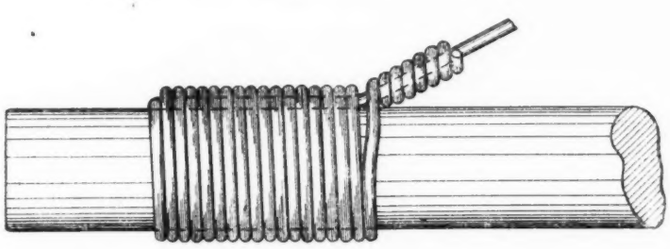


Figure 3.

There are only two good ways of attaching ground wires to gas and water pipes. The best is to wrap the wire upon the pipe after thoroughly cleaning both, and then to solder the connection in a thorough manner. This is harder if the pipe be full of water. In any case it is simplest if a low fusing solder be used, and alloys can be bought which will melt much below the temperature of boiling water and still form a very satisfactory joint. The joint will *not* be good unless the pipe be hot when soldering.

The other way of attaching ground wires to pipes is to use a strong clamp, which will bite into the pipe with considerable force, and in addition receive the ground wire itself under a substantial nut or washer.

Some forms of gas meters have places, associated with shut-off cocks, where a wire may be firmly clamped, and if these clamping points are well cleaned before use, and set firmly in place, such connections are found satisfactory until the gas man unfastens them.

To the uninitiated, the soldering of a heavy wire on a half-inch iron ground rod offers some difficulty, whether the rod be plain or galvanized. The matter should be found simple if the following instructions are understood and followed:

The wire to be attached to the rod may be either of steel or copper, and should not be smaller than No. 14 gauge (.080 inch diameter). Place the top end of each rod to be wired, in a fire hot enough to heat the rod red hot. This may be a combination of blow torches, a coal stove or a forge. Heat the rod red hot for about one foot from the top end. Scrape the heated portion quickly with a file, and wrap the wire upon it, as shown in figure 3. The peculiarity of this wrap is that the end of the wire is first laid lengthwise against the rod and each turn thereafter wraps

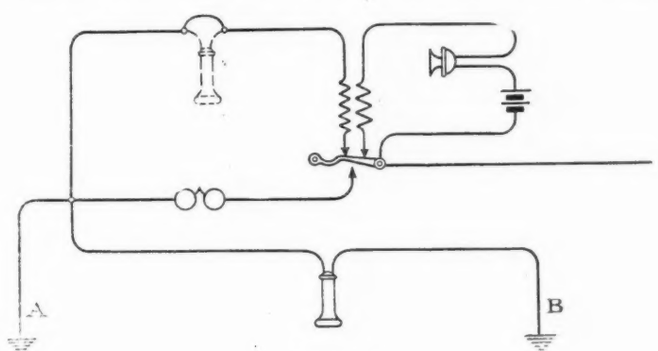


Figure 4.

around both the rod and the stationary end of the wire itself. The wrapping proceeds away from the top end of the rod. When not fewer than twelve turns have been made, the original end of the wire and the main length adjoining the last turn are twisted tightly together.

All this time the wire is becoming heated. Bending the wire down along the rod out of the way, the heated end, joint and all, is laid in a box of granulated sal ammoniac and the entire joint is rolled in that material. Dense white fumes will rise, and when a stick of solder is held against the rod it will melt in a pool in the sal ammoniac. As the joint is rolled in this pool, the sal ammoniac will clean the wire and the rod, and the solder will flow smoothly upon both. As soon as all the places between turns of the wire seem smoothly filled with solder, the joint may be shaken to free it from superfluous metal and allowed to cool. It does no harm to cool it suddenly in water, and in so doing any excess of sal ammoniac is washed away, and both wire and rod prevented from corroding from that cause.

As suggested by figure 3, the joint should be made a few inches from the end of the rod, so that it will be protected from danger of having its end broken off in case the axe should slip in driving the rod.

No ground rod should be less than seven feet in length, and none should be driven in a location suspected to be drier than some other in the accessible neighborhood.

While these and other rules for the successful running of grounds are simple and easily applied, it is not easy to test the ground to see whether it really is good, and, if it is not, what should be done to remedy it.

One of the simplest ways, and perhaps one as sure as any, is that shown in figure 4. The ground *A* is the one under test. Let us assume that it is the ground for a single wire line, and that the instruments in the upper part of the figure are those of the telephone set. Remove the receiver and short-circuit the receiver binding posts, leaving the hook up; connect the receiver in a wire attached to the grounded binding post of the telephone set, the other end of the wire being connected to some grounded thing other than that at the ground *A*. This test ground is shown as *B*, and may be anything known to be grounded, whether or not it is known to be well grounded.

With these connections, have the central office speak loudly. If anything more than the faintest sound is heard in the receiver, it will mean that there is considerable resistance in the ground *A*, and if the ground wire itself is short, and not of very fine wire, the resistance thus proven may be assumed to be in the ground rod or in some joint in the gas pipe or water pipe used; or more likely still, in the connection of the ground wire to the rod or pipe.

Although the figure and selected instance assume a single wire line, it is almost as simple to apply this test to any ground, even if it is normally not associated with the line for talking purposes.

CLEANING SUBSTATION EQUIPMENT.

The problem of substation maintenance implies not merely sufficient care of the equipment to remove the troubles which may occur, but enough attention to keep the entire group of things in a presentable as well as a serviceable state. Before the advent of common battery equipments, the local battery compelled reasonably frequent attendance on the substation. With its passing, there has come a tendency to neglect substation equipments until the subscriber complains. It is believed that this is not good policy, and that the expense of visiting substations at least once a year is fully warranted. At such visits both the metal and woodwork of the equipment should be cleaned in some workmanlike way, and if the nickeled parts cannot be restored to good appearance by the use of metal polish, new parts should be substituted, and the old ones taken to the central office for renickeling.

In case such inspection shows that the subscriber would be distinctly benefitted by the substitution of another complete set in the place of the one he has, such substitution should be made then, or soon thereafter, the released instrument being put through the "scullery department" at headquarters.

The scullery department or equipment branch of central office work should not be held in contempt. With a well-organized workshop for this purpose, most excellent results can be secured. Such an equipment should include one or the other of two good ways of cleaning woodwork. One is to wash the woodwork, after stripping of metal parts, with water and some abrasive soap, such as the much advertised sapolio, or other material containing finely powdered pumice stone. The second method is to wash the woodwork with water and ammonia. Neither washing will injure well applied wood finish, but should be followed by a rinse with clear water. Naturally the woodwork should not be dipped in water, but all washing done by means of a soft cotton cloth.

After washing, the brightness of the finish should be restored by the thorough use of some wood polish, of which there are many, and, most important of all, every vestige of this wood polish should be rubbed off, leaving the woodwork free from it, even to the extent, if possible, of not retaining the odor of the mixture.

It is physically impossible to restore nickel plating to its original brilliancy by rubbing it by hand with any metal polish yet invented. Nevertheless a thorough and powerful polishing by hand with some good paste will improve gongs and other nickeled parts beyond the condition in which they are usually found in substations. The best results in nickel polishing is found by using a soft cotton flannel buff-wheel driven at a high rate of speed, and supplied with rouge. The rouge comes in a cake, and the wheel should revolve downward against the work, otherwise the operator will be painted red as to his face and hair.

A bargain for re-nickeling may usually be driven with a local plater at such a price that it will not be necessary to do local buffing.

CENTRAL OFFICE TROUBLES—MAGNETIC EQUIPMENT.

Both magneto and common battery central office equipments possess many elements in common, and a thorough understanding of the troubles likely to occur, the reasons why they occur, and the methods of curing them when they do occur, will not only furnish greater satisfaction in caring for magneto equipments, but will serve a very useful purpose in the care of common battery equipment with its greater complication when that shall be necessary.

DROP TROUBLES.

Irrespective of the mechanical adjustment of drops, the chief electrical troubles which cause them to fail to operate are due to the windings being open, or wholly or partly short circuited. As magneto equipments are used most generally in the smaller offices, and these offices handle long lines and relatively few of them, lightning is much more likely to get by the protective devices and into the drops than would be true in the larger centers. Even

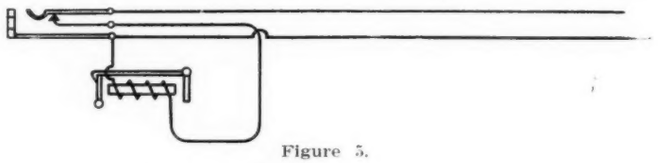


Figure 5.

the long lines in large offices are less able to bring lightning into the equipment as the very multitude of circuits seem to dissipate or weaken such discharges.

There is a tendency of lightning to prefer an open gap through air or other insulating material, to a path directly through a continuous wire, if that wire be wound in a coil. This same feature has been referred to in cautions relative to omitting spirals from ground wires. For this reason it often will be found that lightning will destroy the windings of drops in passing from a line to earth, even though the line circuit leads directly through the drop to earth. It is evident from this, and from experience in practice, that the best conditions of drop construction demand that the core and shell, if the drop has the latter, shall be kept insulated from ground. The earlier forms of grounded switchboards, and even some later forms of metallic switchboards, are not so provided, and it is distinctly true that drop troubles from lightning are greater in the former circumstances.

Sometimes lightning effects, not sufficient to rupture or short-circuit the drop winding, will be found on test to have connected some inner part of the winding to the core or shell, and thus to whatever those parts may be electrically joined. If the result of such a damage is to put the drop out of operation, the fault will soon be made known by the subscriber or operator. If, however, as is really very frequently the case, the winding and the core are connected while still leaving the drop operative, the whole line may be put in trouble and allowed to remain so.

This trouble will be more clear when figure 5 is examined. This shows a very usual form of jack construction, adapted for the use of metallic circuits, and in which the one spring of the jack is broken from the drop contact by the insertion of the plug. If it be imagined that the core of the drop is connected to ground or to any system of night alarm circuits or switchboard framework, which

might be either grounded or connected to a network of insulated wires, then it will be seen that the metallic circuit has a ground on it at the central office end when the plug is not in the jack, or is wrongly connected to such a network as has been indicated. Further and still worse, it will be seen that even though the plug be in the jack, the ground will not be removed, as it comes on through the circuit of the drop, and the drop itself is never cut off as to both its sides.

The result would be that such a line would never be as quiet, if exposed to inductive influences outdoors, as it would be if the drop were clear. Even though a short line and relatively unexposed, it might be found to be very

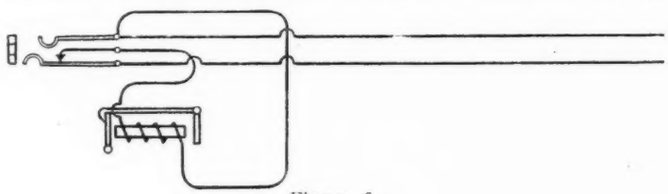


Figure 6.

noisy, if so faulty in the drop, and connected to a long toll line. Every line which is found to be noisy when connected to an otherwise quiet toll line, and not to be noisy when *not* connected to such a toll line, ought to be tested by listening upon it when both drop connections have been removed from the jack.

Figure 6 shows a form of jack which is electrically related to the drop exactly as in figure 5. There are two springs in the jack, it is true, but only one of them breaks its circuit to the drop when the plug is inserted. The other side of the drop remains as truly connected to the line as it did by being soldered to the sleeve connection in figure 5.

With this arrangement, therefore, a connection between the core and the coil winding will make such a line more or less noisy under exposure, depending upon the thoroughness of the grounding of the core through the framework or through night alarm and other associated circuits.

Figure 7 shows the arrangement of jack springs most certain to insure quietness upon an exposed line, or upon one of small exposure when connected to a long toll line, even though the drop be faulty. In this arrangement both ends of the drop are cut off from the jack when the plug is inserted. If the line be equipped with many stations, however, between which stations conversations occur without the necessity of the central office keeping a plug in the jack, there may be serious noises due to a connection between the coil and the core, and the central office operator never be aware of it. She would be the less likely to no-

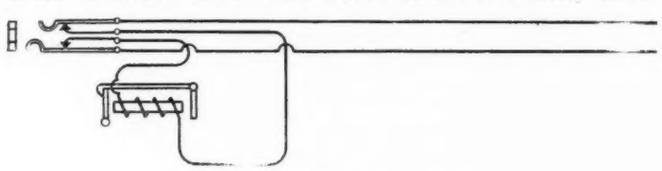


Figure 7.

tice such condition with this jack, because when she plugs in, the drop with all its troubles is cut off on both sides.

It becomes a plain duty, therefore, to assume at intervals that there may be troubles not known to the persons in charge of central office equipment, and to test for them. This will be on the perfectly safe assumption that, if the search be careful, troubles will be found which have been annoying subscribers and injuring the service, but which in the natural course of events would not have made themselves so manifest as to have compelled attention.

SPRING JACK TROUBLES.

In any spring jack it is most essential that each spring shall make good contact with the part of the plug it is adapted to engage, and that the contact of the plug sleeve with the jack bushing shall be made with firmness. That jack is best in which the talking circuit does not depend upon a contact between a plug-sleeve and a jack-bushing, particularly if the parts be small.

The well-nigh everlasting qualities of spring jacks are surprising, yet in localities where the atmosphere contains much dust, heavily used jacks sometimes wear to an extent in which the proper contacts are not made, or their contacts are not broken when they should be. Ordinarily this is due to excessive wear at the bend in the spring of the jack, by which a part of the plug is engaged. The simplest cure is to remove the spring from the jack, lay the bend in a groove in a block of metal, which conveniently may be of lead or solder, and with a suitably shaped punch, drive a dent in the back of the spring just opposite the point in which the plug has worn a depression. With skill in filing the end of the punch, which need not be hardened after filing, the face of the jack spring can be brought exactly where it was when new. If the wear is excessive, it is sometimes of advantage to fill the depression in the back, produced by the stroke of the punch, with solder in order to protect the thin shell which has been upset by the repair.

In all spring jacks the separation of the terminals at the rear is relatively small, and the insulation between the line terminals and those connecting to the signal circuit must be of great material, with its surface in good condition. The former is cared for by the manufacturer, and usually is well done. The matter of surface condition is one often

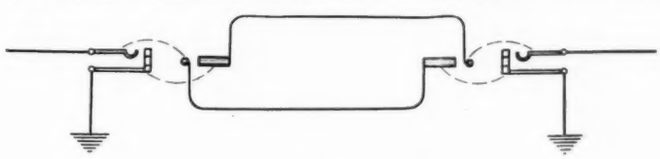


Figure 8.

overlooked, and frequent cases of unbalanced lines may be traced to a bad condition, internally or externally, of the rubber bushings. Much of this results from the use of wrong soldering fluxes, and this is treated a little later in this article.

KEY TROUBLES.

The principal troubles to which keys are heir result not so much from a failure to make their proper contacts when operated, as to remake normal contacts after operation. Assuming that the springs of the key have been formed of proper material, usually German silver with good spring quality, that the springs are not too short and thus likely to take a permanent set, and that the contacts which are in the talking circuit are of platinum, practically all the talking circuit troubles due to key contacts will be found to result from the collection of dust or lint.

During the period after the introduction of the multiple switchboard and before the abandonment of the series line circuit in which jack springs and contacts were connected in tandem with each other throughout the board, it was believed that it had been learned that nothing but a complete abandonment of series contacts would insure good multiple board service. Experiences which came late in the use of the series multiple board seem to have shown that most of this trouble was due not wholly to the fact that there were series contacts in the lines, but to the fact that the jack springs lay horizontally and "flatwise" rather than edgewise. With edgewise contacts the probability of dust or lint collecting to prevent a good connection is very greatly less, and this position should be observed without exception with reference to keys.

In manually operated keys, where strong pressure can be exerted on the contacts, it is not necessary that other than talking contacts be of platinum. Ringing and other

signal contacts, unless they carry very low voltages, may readily be made between German silver. It is of advantage, however, in such cases, to have saw-teeth in the end of one of the springs in order that a plurality of points of contact may be present.

In the use of keys not provided with platinum contacts or those in which the springs are not set on edge, it is sometimes necessary to clean contact points in order that a possible place of trouble may be made known to be good. In the absence of special thought, such contacts might be cleaned by means of a small file, or by the use of emery cloth or crocus paper. All of these ways are bad. The file will wear the contacts away unnecessarily, and is almost certain to roughen them more than is well. The abrasive cloths or papers have the same fault, with the additional fault that the abrasive material is fastened to the cloth or paper by means of glue, which itself gets on the contacts and may make the troubles worse than that which it sought to cure.

The proper tool for such cleaning is simply and easily made. It consists of a small slip of spring steel, such as part of a clock spring. It should be from three-eighths to half an inch wide, and of an ordinary thickness. A piece about six inches long is ground on both its flat sides, crosswise, on a fine emery wheel. As the spring is relatively hard, it will grind cleanly, and will be left with a surface not unlike that of ground glass. In a sense it is a very smooth file, but with much less cutting power than any file which can be bought on the market, and is greatly thinner. An eye may be bent in one end for convenience.

To clean a suspected key contact, operate the key so as to separate the points, pass the spring blade between them and let the contacts close. Draw the spring out gently and the trick is done.

PLUG AND CORD TROUBLES.

What has been said relative to the necessity of registry between plugs and jacks is relevant at this point, and it is by means of the plug that this registry may be tested. If a clean plug without a cord is dipped in gasoline and allowed to dry, inserted in a spring jack and turned round many times while fully home, a clear mark will be seen at the point of bearing of each spring of the jack. If it is desired to test the registry more accurately, a plug of known dimensions may be equipped with a lamp in its handle, or with other associated test circuits so that almost any desired condition of test may be accomplished. To plan these requires a knowledge of the circuits of the board under test, and as such investigations are more necessary in common battery than in magneto boards, more attention will be given to that work in a later section dealing with central battery systems.

Whether flexible cords are provided with tinsel or metal tape conductors, it is most convenient to have those strands which fasten under screws equipped with terminals. As most plugs are small and the space within them cramped, the practice of twisting untipped strands of tinsel under screw heads is to be condemned. In the absence of terminals to solder on the cord strands, it is simple to make them from even common tinned iron, bending small ears over the tinsel and hammering them down tightly, leaving a flat extension with a hole in it to be caught under the plug screw.

If one of the strands is to be bent back along the cord and screwed into the plug, making the sleeve contact by the tightness of its fit, it is essential that the cord have body enough to make its contact firm. If it has not, the cord must be dropped with thread or cotton twine, over which the sleeve strand shall be turned back before screwing on the plug.

By far the greater breakage of cords is near the base of the plug, and, as is well known, this breakage is increased by operators breaking the cord over the base of the plug in plugging in, and by pulling plugs out by their cords. It is a surer method of prevention in this regard to reward operators by increased standing for keeping the rule than to punish or reprimand them for breaking it.

There are many magneto switchboards which still handle grounded circuits, such as single wire farmer lines, etc. If these switchboards are arranged to switch metallic circuits also, such a grounded circuit requires that its missing side be furnished by grounding the terminal of the jack to which the other wire would have been connected. In a switchboard containing any such grounded lines intermingled with metallic circuits, it is very important that in connecting cords to the plugs, similar conductors shall connect to similar parts of both the plugs of a pair.

Reference to figure 8 will make clear what would happen if the two strands of a cord in such a board were transposed with relation to their plugs. In that figure a common error is shown. The tip of one plug is connected by strands of the cords to the sleeve of the other, and vice versa. When such a pair of cords is used to connect metallic circuits together, the results are wholly satisfactory so far as conversation is concerned. When two grounded circuits are connected, however, as the figure indicates, the result will be the complete grounding of both lines, so that no conversation can ensue, nor can the operator hear either party.

CIRCUIT TROUBLES.

The requirements of care demanded by circuits differ with the uses of the circuits themselves. Talking circuits require that in construction the two wires of a pair shall be twisted around each other so as to make the talking circuit, as a unit, as nearly as possible proof against cross talk and other sounds caused by other circuits near them. Also, talking circuits require to be kept in a condition of insulation which is either high, or is exactly equal on the two sides of the circuit in the same region. It is not sufficient that the insulation of one side of a metallic circuit be merely exactly equal to the insulation of the other side, but the insulations, if not very high indeed, must be high in the same degree in corresponding parts of both sides. For the best results, it is also necessary that the capacity of any part of one side of the circuit with relation to all other conductors, shall be the same as the corresponding part of the other side of that circuit. This condition is brought about as the natural result, if the two wires are equal in size and accompany each other throughout their length. But it is not a consequence when one side of the circuit is connected to something else differently from its mate.

Ringing circuits do not require to be transposed and insulated in order that they may not be disturbed by other circuits, but do require that care be taken in their arrangement and insulation in order that no currents may leak from them to the talking circuits.

For the best results all talking circuits, whether of lines or in cord circuits within the switchboard, should be wired with an insulation not poorer than that furnished by two layers of silk under one of cotton, and where these wires are not formed in cables with braided coverings, they should be laced firmly into cables. These are then to be boiled in beeswax until all moisture is driven off, and afterward well coated with thick shellac. In the boiling process, care must be taken not to burn the beeswax or the resulting dark color will interfere with the coloring of the wires, resulting in future annoyance. The fact that all the moisture has been driven out of the cable can be known by observing that bubbles cease to rise at that time.

The most certain prevention of noises from ringing circuits, so far as keyboard wiring is concerned, is to run the ringing circuits from key to key and outward from the keyboard in wires which are not laced up in the talking circuits in the keyboard cables, and to run the ringing cir-

cuits exclusively with rubber covered wire. A good material is wire insulated with rubber, over which a tight braid has been woven, and such wire as is used for electric light fixture wiring is satisfactory.

SOLDERING.

The ability to do good soldering is coming to be the first measure of an apparatus repairman's ability. No matter what his knowledge of circuits may be, and no matter how expert he may become in testing for and locating apparatus troubles, he will always be lame in the execution of his work unless he is expert in the use of the principal tool, a soldering copper.

A soldering iron is so called because it is made of copper and never is made of iron. It is most useful when of a weight as heavy as can be used by its work without getting in the way of other things, because the larger the mass of copper the longer it will retain heat. This applies particularly to copper heated in a fire. The development of the electrically heated copper is an enormous benefit in telephone repair work, because the tip, which is used for soldering purposes, may be made small, as the heat is applied to it as it is used.

The first rule in using soldering tools is that the tip of the copper shall be kept clean and well tinned. By the latter is meant that the surface of the copper shall be kept evenly coated with solder thoroughly united with it; as solder is composed of about equal parts of lead and tin, the term is obvious. Good work is impossible unless this tinning exists, and it cannot exist unless the iron be kept reasonably smooth and free from corroded spots. From time to time, therefore, the iron must be dressed up by filing, and occasionally during use should either be dipped in sal-ammoniac solution for an instant or wiped on a pad of cotton waste which is saturated with sal-ammoniac solution. This tends to clean off the copper oxides which gather on the metal and tend to "insulate" it from tinning. It is to be observed that the copper must be hot when dipped in or wiped on the sal-ammoniac solution, and there should be some solder on the iron at the time, when it will be found to spread easily, with a little rubbing, over all the surface of the tip.

Given a clean hot copper, it is easy to solder together two pieces of metal already coated with solder, unless they be so large that they cannot be well heated by the copper. If both parts are tinned or coated with solder, then the only flux required to make the applied solder flow is rosin, and in telephone work most soldering is done with solder already provided with powdered rosin in it.

Good results cannot be expected in soldering untinned metals together with rosin only, so that it is unwise to use untinned copper wire in connection with switchboard apparatus.

The reason for using no other flux than rosin about apparatus is that none has been discovered which will serve its purpose as a soldering flux and leave the insulating parts in any sufficient state of insulating quality after the work is done. It is a further difficulty that many fluxes tend to corrode the wires and apparatus parts after the soldering has been done.

The code of the National Board of Fire Underwriters specifies a flux composed of chloride of zinc, alcohol, glycerine and water. This is a good material for soldering untinned surfaces, as it is easily applied and remains in place, causes the solder to flow freely, and is not the most corrosive of chemical fluxes after the soldering is done. But useful as this flux may be in such work as mending tinware and patching up mechanical devices, it is absolutely to be prohibited in the soldering of conductors to each other and to apparatus in telephone systems. Equal condemnation must be given to all forms of paste and soldering sticks, none of which are more suitable for use in these particulars than is the chloride of zinc solution.

If parts of apparatus can be soldered together and then washed before assembling, there is no more hurtfulness in using acid or alkaline soldering fluxes than in the use of chemical solutions connected with the process of plating. But it is hoped that all maintenance experts will appreciate the necessity of an exactness of division between a rosin flux on the one hand, and all other fluxes on the other, as being suitable and unsuitable respectively for use in soldering conductors in the assembling and repairing of telephone apparatus.

QUESTIONS AND ANSWERS

By J. C. Kelsey

I WOULD like to know either by letter, or in Questions and Answers, a little about exchange accounts. I have an account book with headings. 1. Operating expenses. 2. Repairs and maintenance. 3. Construction expenses.

The item of dry cells troubles me most. I don't know whether to put them under the first heading, or the second. Also, to what account shall I charge the inspector and trouble man's time. Another thing, I would like to see Mr. Kelsey's picture published in Telephony, so we could know better who we are talking to.—H. W. B.

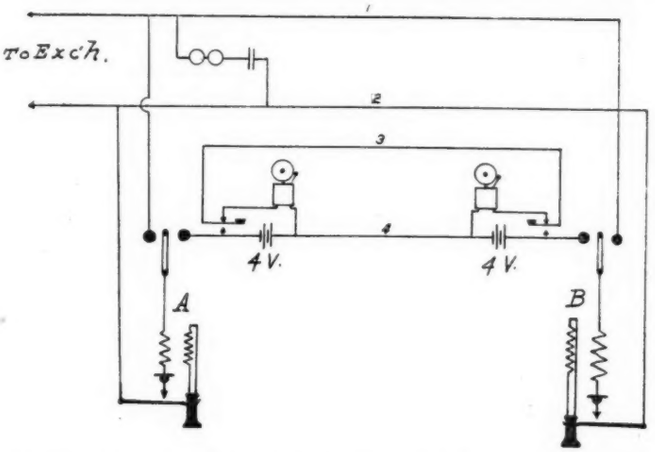
Properly speaking, repairs and maintenance mean the same thing, and are a part of operating expenses. When you hear of a company saying it costs $21 a telephone to operate it for one year, you may be sure that repairs come into the item. In a system like the one in hand, it is well to hold them separate, and call operating expenses the wages paid to operators, rent, heat, light and power, etc. The question of dry cells is not a difficult one, when analyzed closely. It looks as if it might come under the head of depreciation, because here you have something which wears out, and cannot be renewed, whatever effort you make. But apparently are not taking depreciation into account, and this would be reason enough for calling battery renewals something else. If for a moment we consider this, that the talking battery is a question of power expense. Those engaged in common battery operation easily charge their power bills to the operating expense column. Now your dry cells are nothing more than power bills. Whenever you renew an instrument battery, you are simply doing in an expensive way what the common battery man does when he charges his storage battery. Therefore, call your dry cell expense operating expense, and class it with your light, heat, rent, power and numerous other items.

When your inspector, presumably an all around man, replaces a rundown battery, he is practically engaged in charging a battery. He is not repairing anything, he is simply helping in a performance, which is automatically done in a common battery system. Hence, this act of his is properly charged to operating expense. After this job is done, you call him up, and tell him that a high load of hay has torn down John Smith's line, and to hurry out to fix it up. It takes him two hours. Therefore, two hours of his time is charged to maintenance, or repairs. You find that, after this job is done, there is no trouble, and you tell him to run

a new line to John Jones' house, which is construction. This takes five hours of his time, and you must charge it up to construction. So far, your versatile inspector has put in one hour on operating expense, two hours on maintenance expense, and five hours under construction expense. Two valuable hours are left, and you tell your good man to "go over to see John Robinson," and get him to take a telephone at a $1.50 per month. Your versatile inspector goes over, and in two hours gets Robinson's signature to a year's contract. Now I ask, what shall we charge this to? My answer will make dozens disagree. You know we can't help that. What would you charge these two hours to? Not to operating expense? No! You would not burden your operating with a soliciting load. Well, you can't call soliciting a sort of a repair, or maintaining job. Well, again, you can't call it depreciation. Construction is all that is left. Shall we charge it to construction? Well, I should say so. The man is engaged in constructive work. His work is just as new, and as constructive as any new line of wires you can run. So be careful, when you get to charging up your inspector's time. You will have to divide him up. He is a jack of all trades, and contrary to the old saw, he is a master of all of them. I have met some of the brightest and best young telephone men in this country out in exchanges, not having more than four hundred subscribers. It is the strength of the Independent cause. You will observe that I have made no distinction between your inspector and troubleman, as I have assumed them to have practically the same work.

And last about the picture, for that is a delicate subject. I am afraid that B. W. B. has not been faithful in reading good old TELEPHONY every month. If you will turn back, not more than six months, you will find my Lydia Pinkham cast of countenance looking at you. The editor intended running it every month, but prudence prevented it. Besides, I am afraid that some of you will come to Chicago some time, and do me bodily harm for bad advice. I want to reassure the readers that I do not advise, but simply suggest. The telephone business is peculiarly a condition of local environment. That is the reason that the Bell company is borrowing 150,000,000 more dollars. They are trying to learn in an expensive way what most people can see for twenty-five cents. It is no more possible to dictate from a lonesome spot called Boston, than it is to fly, what each and every division of American life shall do. Instead of being a natural and general monopoly, I thoroughly believe that Providence had a pure local idea in mind when allowing the telephone to come into the world's work at this late date. For me to tell B. W. B. what to do from Chicago is foolish, because I don't know the conditions that B. W. B. is striving so manfully to meet. I am sure of this that every owner of Independent properties is a king in his own right, and is a man who has planted an orchard, he himself may not benefit, but his children will. His cold footed neighbors, who go sub-licensee, will only gnash their teeth in impotent rage, when they realize that they took to cover a little bit too soon. The cloud, which they took to be a cyclone, was simply a bit of mist Brothers! Hang onto your nice little Independent properties. They are good, and be not afraid. When some $60 a month solicitor from the Bell company whispers like the serpent of Eden into your ears, go out and get a drink of nervine. That cheap and oily solicitor would not be talking to you if he were not there for your ruin. I know of one great and good Independent telephone man who had to go sub-licensee, and sell out to the Bell, because their serpent-like talk had gone into the ear of the country banker who had been backing him. He is looked upon as a Benedict Arnold, not only by his Independent mates, but by the Bell workers themselves. History tells us that Benedict Arnold had no friends in England. You may be sure that he had none in the colonies. So don't sell out. And don't get frightened. And above all, don't get flattered. Remember the fly, who was invited into the spider's pretty parlor. I advise further, kick this solicitor out. You don't need long-distance connections. When a man in a small place talks to Boston, it is a holiday for him. He has time to go to the Bell booth. Either his mother-in-law is dead, or something extremely important has happened. Your local supremacy is 90 per cent, your county supremacy is 9 more, leaving a *nasty, measly one per cent advantage to come from your Bell affiliation.* I know something about the theory of this sub-licensee game. It is this, "*Heads I win; tails you lose.*"

In the two station inter-communicating system described on page 359 in the November issue, it seems that the contacts at the bells would tend to make the circuit noisy. The arcing that takes place at these contacts, when the comparatively large calling current is flowing, would corrode them, and impair the connection. Also if



the receiver at the called station is removed before the bell tapper has come to rest, then the current flowing will be very apt to keep it vibrating more or less, and make speech impossible. I enclose a circuit that should work very satisfactorily. Will be glad to hear opinions concerning it.—J. H. S.

I am pleased to acknowledge receipt of your favor of 7th. Your failure to answer made me think I had made a grave mistake in writing you. When my subscription expired in August I failed to renew. So if you will now send a bill for one year's subscription to R. & R., we will be pleased to promptly remit.

The problem of farmer competition is the most serious one we have to meet. Bell competition can be reasoned with, but the farmers know more about the telephone business than those who have had long experience. So when we read "The farm telephone costs about $25.00 per mile to put up, which sum includes one telephone instrument complete. A ten mile line reaching ten families would thus cost $250.00. To this may be added $10.00 for each additional telephone on the circuit. For the money thus invested no greater convenience is within reach of the average farming community." (See July Telephony, page 65, at bottom. There are two pages marked 65. We refer to the first one.) That makes us "hot under the collar" because it incites farmers to compete with Independents and then the statement is wrong and misleading. For instance in one section of our territory farmers were induced to go into a mutual company on that same specious talk. They put in $35.00 each. Since then they have been assessed $8.00 a piece more. Of course, they all went into the mutual company because at $15.00 a year for three exchanges we were robbing them. As a consequence in a little field where one company could have a profitable business and furnish a first class service, the result is that there is a mutual exchange giving poor service and our exchange furnishing good service at a loss.

Your editorial on page 52, same issue, seemed to me to be intended to be read in support of the paragraph on page 65. Perhaps you didn't intend to encourage mutual companies, but some of us who are in the business are "touchy" on this proposition.

It would do some of your readers a vast amount of good if you could devise some way to get before us the experience of Independents who have had farmer competition the longest time. We expect to wear it out and believe we are doing so where the farmers alone are in the mutual companies as they give little heed to business methods. But we have mutual competitors at the head of which are good business men and they will not lie down so easily. There never was a reason for the existence of a mutual company in our territory. Some one raised a hue and cry that we were a robber corporation and then another wiseacre read in some manu-

facturer's literature that farmers could have telephone service for life by paying $25 in one bunch and the more we tried to reason the more certain they became that we were liars and robbers. So now it's a case of the survival of the fittest.

The officers of our company eagerly read everything they find bearing on the mutual company problem and if you desire to aid us in a practical way the field is before you, in helping us to solve the problem of farmer competition. Between Bell and farmer we are 'neath the upper and the lower stone. They are both fighting us and neither careful of ways and means. We have been giving good service at reasonable rates and any man in the community who wanted could have from $50 to $5,000 of our stock. We have tried to treat the public right, yet a large portion of it readily believes that we are a robber corporation. The Bell company offers to make a contract with us for long distance service and sometime we think it would be well if we turn over our field to the Bell company. People then might find out the injustice that had been done to a worthy local Independent institution.—F. C. R.

Great questions solve themselves. When thieves disagree, the honest man stands a chance. You know it was a thief's quarrel that gave the policy-holder a chance. Roger's contemptuous behavior in the Missouri inquiry into the nastiness of the Standard Oil Company serves the case of the gallant Hadley just as well as any other way. The people understand. Look at the great wealth of Marshall Field. He is dead. Has Marshall Field any sons, or posterity to carry on his work? No. That property will shrink back to its 1873 size, because things only go so far. Everything seems for the best. And that is the way I size up the farmer problem.

First y, gentlemen, let us look into that expression, "Consistency, thou art a jewel." The Bell company was in your locality, with its greedy and inefficient ways. You came in, and gave the people an improved service. You remember that Puritans left Holland and England because they wanted liberty of religious action. They came to this country, and endured inconceivable hardships and dangers, and triumphantly survived. Just so have you survived hardships, and are triumphant. But when the Quakers, with their inoffensive ways, came to New England, the Puritans treated them worse than they were treated in the old country. They forgot their fundamental principle of independence. They wanted everyone else to do just as they did.

Now you are in a situation a great deal like the Puritan. You went into a new and untried business, and have succeeded nicely. You have forgotten the fundamental principle, that of independence. You are trying to make the farmer worship exactly as you do.

Consider the farmer. A spoiled child. Have you not heard the political speeches, how each party brags on the farmer. They have swelled his head. He really is our most intelligent citizen. He knows more in five minutes than a Chicago business man knows in a week about our country. He really is the safety valve of our country. He feeds us He is a horrible gambler. He bets on the weather. If any of us staked our whole year's living on the throw of a dice, our relatives would confine us. The farmer does this. His dice are hail, storm, flood, and drouth. Hence, he is a courageous being. And he has a right to engage in the telephone business.

A large per cent of the farmers are in debt. They have a mortgage held by a city shark. Each egg, each pig, each calf and each apple have to be counted, as a relief to that mortgage. Do you wonder that the farmer in his earliest conception of the telephone business thinks that the city telephone company is robbing him? This telephone business is so horribly new. The farmer has to learn by hard lessons. Let him build his cheap lines. He is educating himself to be one of your best customers. His education is not costing you anything, except your patience.

I am personally interested in a company, which lately faced a farmer mutual company. Some of our stockholders got cold feet, and many weather-beaten prophets predicted the death of our concern, which had 2,300 telephones, while the Reuben line had about one hundred. They argued that if a farmer put up one hundred dollars he would always have service free. Or if he put his name down for fifty cents a month. The truth is that this mutual concern really built up a neglected country, and they are educating God's chosen people for our company. We have seen the rise and fall of the farmers' alliance, and the fall of the co-operative store. These farmers can't agree long. They will come into the fold. But it takes time.

One astute telephone manager solved his farmer trouble, by this proposition. His rates were $18, and the farmers thought it too much. He has earned 8 per cent right along. So he went to the farmers, who were willing to take one dollar a month service, and sold them each seventy-five dollars' worth of stock, and from which they agreed to draw no dividends for five years. On this basis, the farmer paid out twelve dollars a year, and got good eighteen-dollar service, beside taking an interest in the company, because he was a stockholder. This plan has been very successful.

The farmers' telephones are what is needed to make the telephone business successful. There should be four telephones on every square mile of your farming country. They should go into your exchange. You can't whip them in. You must devise an attractive way, which will be helpful to both.

The Bell company talks just a little bit as you do. What goes up must come down. The Bell company feels just as you do, too. And I don't like the last sentence of your letter about taking a Bell long-distance contract. You have heard of the man who cut off his nose to spite his face. Possibly you won't like this kind of talk, but if an editorial appeared to you to support mutual enterprises, I don't see how any kick is just, because farmers take TELEPHONY, too. My advice is to conciliate, and not to quarrel with your mutual competitor. After all, the butcher, baker and grocer get along with competition. So can you.

Don't look for people's gratitude. McCurdy, McCall and Alexander think the policy-holders ungrateful. Stick to your good Independent ship, and saw wood. Nothing can harm you, if your nerve is maintained.

Would you please explain what effect a retardation coil, and also a condenser, has on high frequency, low frequency, and direct current respectively?—C. S. S.

There is a law called Ohms law, in which the current flowing is equal to the pressure divided by the resistance. If it were direct current, with a battery pressure of one hundred volts, and your impedance coil had ten ohms resistance, then ten amperes would flow.

If this circuit were changed to one hundred volts alternating, the quotient of the volts divided by the ohms will not give ten amperes, because of the retardation function. The resistance of the circuit is changed. Instead of ten amperes, the current may measure five amperes, with the frequency at twenty cycles. What has happened? There are two functions to your resistance, one ohmic, and the other apparent. The ohmic resistance is ten, and the apparent resistance is ten ohms additional, hence only five amperes flow.

Now, suppose the frequency is changed to 1,800 cycles, then you will find that the hundred volts will not force even an ampere through the circuit. Then you have ten ohms of real resistance, and eighty ohms or more of apparent resistance. A practical example is, to compare the weakening effect of a ten-ohm retardation upon an ordinary ringing current, and then try to talk through it.

Capacity is the reverse of retardation. You will observe in a common battery system that direct currents cannot pass through a condenser at all, hence automatic signaling is made possible. To ring through a condenser slightly weakens the ringing effect, as it is a low frequency current, while you can talk through it without detecting it.

When the retardation, in the twenty-cycle circuit caused

but five amperes to flow, you could add enough series capacity to raise the current up to its ohmic value of ten amperes. You then could add more capacity, and the current would be reduced again. The whole struggle of telephone and power transmission interests is to balance up these rival functions, so that alternating current may be made to act like direct current.

Will you kindly state in your next issue of TELEPHONY, of instances where the United States government is using Independent makes of telephones. We are competing with the Bell Telephone Company for the business of the United States Reclamation Service. Any information will help.—P. V. T.

The Department of Agriculture has a complete Independent exchange at Washington. The army uses Independent makes of instruments for signal service work. You have heard of the postoffice telephone agitation. It was under Henry C. Payne's postmaster-generalship that it was decided to compel postmasters to throw out the Independent telephones. Not being able to talk to Washington, the Independent telephone was useless. Such reasoning could only originate in the brain of a Bell foundling. Such was Mr. Payne, now of blessed memory, for he was president of the Wisconsin Telephone Company. If he thought Bell service was superior to Independent service, he certainly was not thinking of his own company, for it was the worst licensee company in existence. The postoffice agitation died down, when the chief conspirator died. Now Independent interests have a fair chance, although the government leans favorably toward the Bell, and all fat juicy corporations, as they maintain a Senate for their benefit. If you could send your hired man to the Senate, you would not have to compete for anything. If the readers are aware of government usage, please inform this department.

What is the cause of that buzzing noise, when the receiver of a telephone set is held to the transmitter? Is it a sign that the line is all right? How is a telephone wired that is used on a central energy system?—A. G. L.

Here is an answer to the above question clipped from a scientific paper:

When you hear a sound in the receiver of a telephone, it means that something is going on over the line. It may be that someone is talking on the line, which is all right. It may be cross talk from some other line, which is not all right. A central energy system is wired so that all instruments have connection with the battery to ring their bells at all times when the telephones are on the hooks. Diagrams of wiring will be furnished for any system by those who handle and sell the instruments for that system.

The wise man who answered this question as above is in the employ of a prominent scientific paper. He undoubtedly is one of those types of genius who think that the telephone business is child's play. Would not a central energy telephone so connected to a battery that when the receiver is hung up, it would ring all the time, be a good thing?

Can you give me a good arrangement to cut down noise on a charging machine? I have tried several, and the best was a four microfarad condenser bridged across the main line, but it was not satisfactory. What can you suggest? I had a peculiar case of cable trouble the other day. Lightning entered the cable, passed three spans, where it was a lone cable on a messenger, then it went on the same messenger with another cable for three spans, then into a terminal box. About two feet from the pot head, on the open side, away from the pole, there was a hole burnt in, about half the size of a lead pencil. It seemed to come from the inside, as the hole was larger on the inside than on the out.—B. H.

The ordinary arrangement for cutting down noise is to insert impedances in each side of the generator circuit. These impedances are of very low resistance, less than an ohm, with twenty turns of No. 4 wire wound on a straight core, eight or ten inches long. A bank of condensers is bridged across the mains, above the impedances. These help to smooth down the fluctuations of the generator current. Usually, these days, a noisy generator is hard to find. They are wound with many conductors, lots of commutator bars, and such a speed that the vibration exceeds 5,000 per second.

I wish everyone would record their lightning experiences. They will always be of interest.

OREGON TELEPHONE MEETING.

A network of telephone wires spreading throughout the entire state, giving connection between all of the principal cities and towns and focusing in Portland, the owners of the various component systems working in harmony for its maintenance and extension—such is the purpose of the Oregon Independent Telephone Association, organized in Portland January 4. The charter membership of the new organization comprises a large number of the Independent telephone companies of the state, and the intention is to bring in all those not yet affiliated with it. They propose to work as a unit to improve the Independent service in Oregon and to fight for business against their competitor, the Pacific States Telephone Company, owner of the Bell lines.

For several years the Independent companies throughout the state have been struggling to gain an entrance into Portland, and have repeatedly applied for franchises in this city, which have been refused. The construction of the automatic system now being installed by the Home Telephone Company has settled the difficulty. This company will be the chief factor in the new organization and will give to the other Independents the Portland connection of which they are so desirous. The extensive system which will result will be in a good position to compete with the Bell lines for long distance as well as local business.

At the meeting held the following men were present: F. H. Stow, manager of the Home Telephone Company; W. D. DeVarney, manager of the Corvallis Telephone Company; S. G. Hughes, manager of the Forest Grove Telephone Company; O. G. Wilkes, manager of the Hillsboro Telephone Company; J. W. Condon, manager of the Dalles Telephone Company; P. L. Brown, manager of the Silverton Telephone Company; Henry C. Chapelle, manager of the Woodburn Telephone Company; A. B. Flint, manager of the Scholls Telephone Company, and C. H. Morris, manager of the Dalles Telephone Company. There are also Independent systems at McMinnville, Albany, Brownsville, Lebanon, Scio, Stayton, Turner, Chomawa, Newberg, Dayton and Sheridan. All of these companies will be asked to join the Association. In addition to these, the Home Telephone Company has been granted a franchise in Salem, and has applied for franchises in Eugene, Baker City and Pendleton, and these cities will also be connected with the Independent system as soon as the lines are installed.

The meeting was called at the instigation of W. D. DeVarney of Corvallis. A constitution was drawn up and adopted, and the following officers were electetd: F. H. Stow, president; S. G. Hughes, vice-president; P. L. Brown, secretary and treasurer. The executive board is composed of F. H. Stow, P. L. Brown, J. W. Condon, C. H. Morris and O. G. Wilkes. The constitution is modeled after that of the Indiana Independent Telephone Association.

The men present at the meeting represented companies owning 3,838 telephones actually in use. They are distributed among the various cities thus: Corvallis, 1,500; The Dalles, 500; Alsea, 450; Forest Grove, 430; Dallas, 258; Tillamook, 225; Hillsboro, 165; Scholls, 140; Silverton, 105; Woodburn, 95, and Beaverton, 20. There are about 14,000 Independent telephones in the Willamette Valley alone.

The objects of the association are:

"To encourage development; foster and stimulate the growth; protect the mutual interests; promote and systematize uniformity of accounting, operation, maintenance and construction of Independent telephone interests, and to defend the same from unfair encroachment or competition, by co-operation and by such other valuable means as may, from time to time, seem advisable."

TELEPHONE ENGINEERING IN "THE COUNTRY GOD FORGOT"

Published through courtesy of the Journal of Electricity

By George Bond Ellison

MENTALLY resolving that there must be at least eight or nine hundred of them, the engineer in charge of Telephone Construction Reclamation Service, U. S. G. S., Tonto Basin project, rolled off his cot at four o'clock one crisp morning and cautiously poked his head through the ten flaps and looked down the gentle slope that merged into a sand flat and on to the curving sweep and subdued purr of the Salt river.

The clear Arizona moon silhouetted the scene in startling lights and shadows and across the river the black profile of the bills showed clean-cut and with a fierce suggestion of aggressiveness. There in the middle of the sand flat two lonely coyotes were chasing their tails in the moonlight and yap yapping more different kinds of noises at one and the same time than nature ever intended two animals to produce. Here was game—real live game—and quietly reaching back for that brand-new Colts forty-five, the now thoroughly awakened engineer stepped out of the tent and in a moment the hills echoed and reechoed the six sharp reports; the coyotes dissolved into thin air, the hunter suddenly remembered his bare feet and was this not a land of rattlesnakes, tranatulas, centipedes, Gila monsters, scorpions? — b-r-r-r! — a jump, a roll in his blankets and the engineer drowsed off to sleep again to the accompaniment of an eloquent and emphatic dissertation by a government packer in the next tent, on the pedigree and brain capacity of any "idjit who would deliberately waste good powder on a couple of measly, mangy, yellow-bellied coyotes." Thus are our illusions shattered.

Boiler Flue Cemented Into the Rock.

* * *

Fresh from the east, self sufficiently full of the rule and precedent of the text books, ready with a slide rule and a formula for any problem, feeling an inward contempt for the triviality of the job, even mentally criticising the fool government for wanting to survey a line so self-evident in its simplicity, the journey into Phoenix had been across a desert monotonous in its level, sun-broiled stretches, this construction man had somewhat unenthusiastically reported to the supervising engineer at his office in Phoenix, Arizona, to take charge of the survey and construction of the long-distance government telephone line to be built from the Arizona dam to the Tonto basin and the upper dam.

Long distance, mind you! eighty-six miserable little miles. Why! it was a shame to take the money!

Now given a Pullman car, a magazine, a fragrant cigar, ice water at your hand and Scotch and soda in the buffet, and eighty-six miles is a pleasant incident; given a devilish-tempered hill pony, a cow puncher's saddle, a broiling sun, a rough, wild Indian trail, an occasional sip of hot, salty water, and eighty-six miles is plain unvarnished Hades.

The instructions of the supervising engineer were brief and to the point. The government had given a contract to Jas. P. Thorpe of Denver, Colorado, to build the entire line under government supervision and along a route to be surveyed and staked out by the U. S. G. S. engineers. The contract was made up in four sections at so much per mile for each section; the first section from the Arizona dam to what was termed Stewart's ranch, twenty miles, the second section from Stewart's ranch to Fish creek, about twenty-three miles, the third from Fish creek to Tonto basin dam site, twenty miles, and from the dam site to the upper Salt River dam the fourth section, twenty-three miles. The line was to be full metallic of No. 12 E. B. B., 18-inch cross arms transposed four times to the mile and the specifications called for thirty-five poles to the mile, "as near as possible," and as it proved this last was a wise qualification, for it was not near and it was not possible.

From the Arizona dam to the Tonto basin, the contract provided for iron poles, poles to be furnished by the contractor, and an interview with Mr. Thorpe brought forth the fact that he had bought up all the old two-inch, two and one-half-inch and three-inch boiler flues in several states and territories, principally from the railroads, and that they would range from twelve feet to sixteen feet in length. From the Tonto basin to the upper dam site it was to be a wooden pole line, poles to be furnished and laid at the stakes by the government.

The make of telephones had been agreed upon and there were to be ten stations, and four of these were to be test stations, and outside of these general conditions the engineer in charge must work out his own salvation. The supervis-

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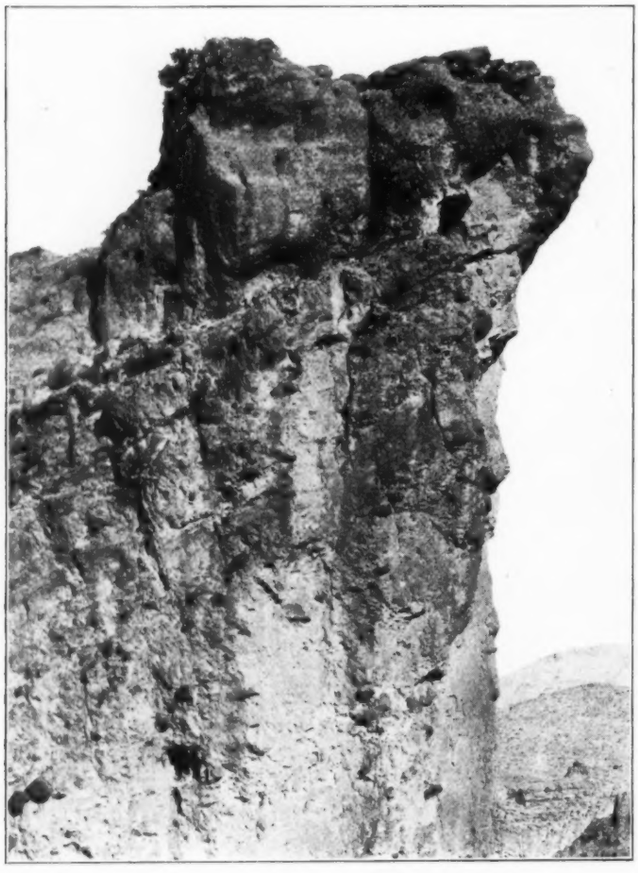
ing engineer further stated that Wm. A. Farish, assistant engineer, U. S. G. S., was then in camp at Stewart's ranch and that on reporting to him a surveying crew and camping outfit would be provided for the telephone engineer, and also that Mr. Apgar, who would act as transit man on the survey, was in Phoenix, and it might be advisable to see him and get some information as to personal outfit, etc.



A Span Site 4,000 Feet Long and 1,200 Feet Sheer Down.

Mr Apgar was hunted up and interviewed with the result that that same evening found the engineer on the train headed for Mesa, Arizona, clad in khaki, leggings rough-rider hat, with a roll of blankets and a folding cot, a canvas war bag, and the hereinbefore mentioned Colts forty-five and bristling with a cartridge belt and holster.

Pisturesque, possibly? a bit uncomfortable, decidedly.

His new spurs jingled merrily, and interhooked occasionally; he had not yet learned the trick of throwing the gun a bit forward as he sat down and consequently sat down on it and felt himself growing consciously red under the inquiring scrutiny of other khaki clad, gun-bedecked gentlemen whose rather frankly amused glances plainly marked him new, brand new, and he mentally resented it by reason of still being veneered with a thin coating of eastern superiority.

The transit man, Mr. Apgar, was not inclined to be particularly communicative but the engineer managed to elicit the information that Stewart's ranch lay on Salt river, thirty miles from Mesa, and that it was the end of the wagon road and incidentally of civilization. Further they would find at Mesa a wagon, in for a load of hay for the camp and that by starting at five in the morning and with good luck they would reach camp at about ten in the evening.

A surprisingly clean bed, a good night's sleep and at five the next morning the engineer and his little party augmented by another young man, fresh from the Boston School of Technology, and who reported as assistant engineer, perched high on a load of baled hay, drawn b six black, wiry government mules and listened to the pure Arizonic vernacular of the packer, as he admonished a fractious leader that he had "better be gettin' purty gentle now!"

Hour after hour they hiked across the burning sands of the Salt River valley; hour after hour they watched with hot, aching eyes the thin brown line of the hills which were their destination, and they seemingly made no progress. At one o'clock they came to the first river ford and as the wagon stopped, to let the tired mules drink, the Boston boy leaned over and scooped up a tin cupful of water and started to drink it eagerly, and as eagerly spat it out.

"Why? the —— stuff is as salty as ——!"

The old packer stopped in his cigarette rolling and solemnly said:

"Son, if yu stick to this yer job long I reckon yu'll see the time when yu'll be willin' to swap everything yu got fer one swaller of thet salty stuff."

And it was even so.

Lunch was eaten, hard boiled eggs, canned corned beef,

Test Station During Construction.

rye bread and a slab of pie, washed down with cold coffee and the journey was resumed, through the long scorching afternoon.

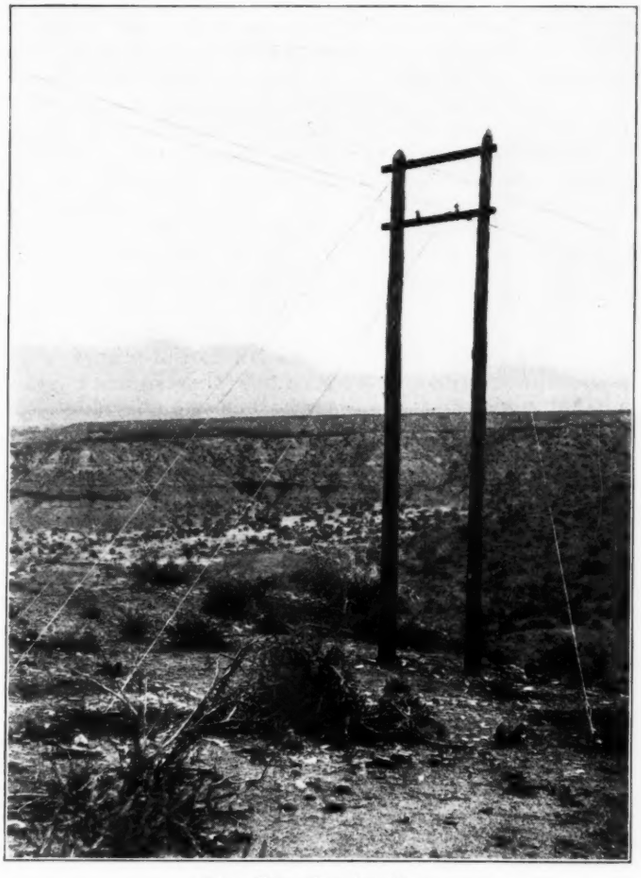
The descending sun bathed the now fast approaching hills with burnished gold, deep tintings of red and royal purples, a subtle change was in the very atmosphere, the rapid babbling of the river seemed gently hushed, the call of the quail turned softer in its tone, all this wild land seemed to throw away its fierceness for the moment to pronounce its benediction upon the departing day. Now the golds, reds and purples changed to somber browns and grays and night fell with that sudden finality which, in this Arizona

land, marks the transition from day to night, the black, whispering, mysterious night of the hills.

The wagon racked and strained into the shadows and the engineer, turning up his coat collar against the little nipping breeze, suddenly felt himself possessed of a curious feeling of impotent helplessness, his assertiveness and superiority gradually oozing out at his finger tips, here was something intangible and uncertain, something beyond human learning and knowledge and as nature asserted itself he went to sleep, high up on that load of government hay, looking back on the bright, sun-kissed day as a dream, gone forever, they would go on and on, swallowed up in this irresistible, inky blackness; some other engineer would have to build the telephone line, they were lost— lo—.

"Yu better be gittin putry gentle now—whoa! yu Jinny mule! I'll jist naterally beat yer cussed head off!"

The wagon stopped with a complaining whine. A line of tents tinged to a ruddy glow by a roaring camp fire, the joyous yelp of a dog snapping at the Jinny mule's head, a dozen welcoming hands and more welcome voices in greeting, an introduction to Dutch Jake, the cook, which resulted in hot coffee and a square meal and the engineer joined the husky fellows at the camp fire, and as he rolled his cigarette he inwardly observed, "We were lost and we are found again, I wonder who, in the name of all that's good, found us?"



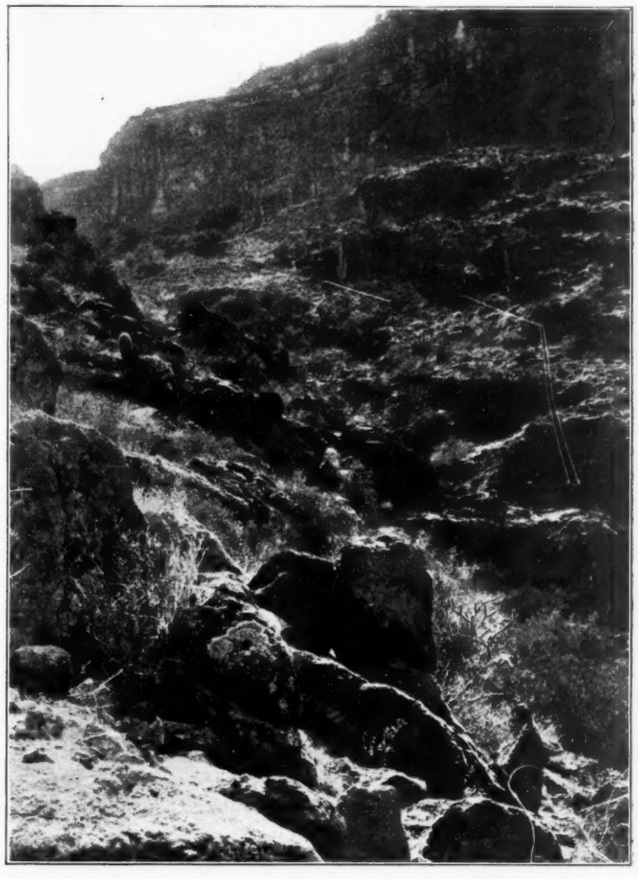
Long Span Construction.

Assigned to a tent, his cot unlimbered, and rolled in his blankets, he slept as only those sleep who are dead weary and who can breathe deep into their lungs the pure vitalizing air of the hills; the episode of the coyotes, and an hour later the cook's hearty call for breakfast, the engineer hastily dressed and stepped out into the clear, bright morning and looked upon a new, unconquered world and as he looked right then and there he began to shed his rule and text, his precedent and his superiority.

Gone were the flat level stretches of the desert.

Gone were his 150 feet spans and standard construction.

The camp lay on a little flat on the river bank, called a ranch out of courtesy to a brush corral, where the cattlemen at certain seasons held their round-ups, completely surrounding them were mighty walls of solid granite, seemingly inaccessible peaks, jagged and frowning, nature's heroic architecture in its roughest mood.



"A Land of Rattlesnakes, Tarantulas, Centipeds, Gila Monsters and Scorpions."

And they were sending puny, insignificant men here to build roads and dams, telephone lines and power houses, by what miracle the mules had found their way in the pitch darkness last night into this fearful upheaval of rocks was beyond the engineer.

Here was a work that needed just three things, indefatigable labor, persistent determination and a large crop of common horse sense.

It was a meek and thoughtful engineer that wended his way to the mess tent and a breakfast of bacon, beans and coffee.

There was no question this was the end of the wagon road and civilization.

Space forbids a detailed story of that survey. From the Arizona dam to Stewart's ranch it was comparatively easy; from Stewart's ranch on to Tonto the way was strewn with what at times seemed insurmountable difficulties, deep wide river crossings, forbidding, rocky canyons; nature made a protest at every step to the invasion of her stronghold.

Days of scrambling over the rocks, locating and relocating, it was a favorite saying of the transit man that the engineer would stand at the bottom of a gorge and heave a rock up the mountain side and say:

"Mr. Apgar, you will place your instrument about there and find out, if you can where the blazes we are at."

And to the transit man's credit be it said, he managed

usually to get a set in spite of the danger or difficulty. Spans of 800, 1,000, 1,500 feet were everyday incidents, and often the crew would be laid off for three or four days while the engineer and a companion would painstakingly hike over the hills trying to locate a mile or so of line that seemed totally impossible, for the contractor had to be considered, and the Salt river floods and the line rider who would maintain this line after completion.

Profile and traverse were made up in camp, or what passed for a camp, for after Stewart's ranch the scarcity of water for animals made it impossible to carry anything but blankets and food and a portion of the time drinking water was packed in to the crew on a mule's back in kegs, and bacon and beans and black coffee were the daily portions.

Another surveying crew, under H. D. Stone, was started at the upper dam to work down the river to Roosevelt and this entailed a weekly trip by the engineer, on horseback, of from fifty to sixty miles of unspeakable trail, to overlook the work at that end. Here the conditions were entirely different but none the less difficult. This section was made up of wild rolling sandhills, barren of everything except cactus and mesquite brush, cut into by enormous washes—and span after span of 600, 700 and 800 feet was necessary.

The two surveying crews met one day in a sand wash about eighteen miles from Tonto and straight way erected a pole on the site of the last stake and some one contributed a red shirt to hang thereon and for many a day that red flannel rag boldly flung its lurid color to the winds to commemorate the finish of the survey of the telephone line to Tonto basin.

The surveying crews and Mr. Stone reported to headquarters for other work and the engineer turned his pony's head towards Stewart's ranch again to act as inspector for the government in the actual construction of the line.

The contractor and his superintendent, George P. Brown, and a first installment of about fifty men were found camped at a Mexican goat ranch about ten miles below Stewart's ranch with a portable blacksmith outfit, material for thirty miles of line, about one hundred burros and a so-called portable power drill guaranteed to drill a four-inch hole twenty-four inches into solid rock in sixteen minutes with four men. This contrivance weighed some 950 pounds, but a trip to Stewart's ranch over the staked line convinced Mr. Brown that it would take longer to pack the drill, if it were feasible at all, than it would be to use hand drills and it was sent back to Phoenix.

The work of transporting material, men, tools, provisions and water through the hills was a formidable task but the details were laid out to a nicety, and through Mr. Brown's executive ability and ingenuity every difficulty was promptly disposed of without loss of time or material.

The boiler flues were heated and flattened on one end and punched with two holes and the cross arm bolted on, the butt of the pole was then dipped in hot asphaltum for two feet of its length and allowed to cool and harden. The pole was then set one-tenth of its length in cement, mixed about half and half.

The long span construction was made up of two three-inch tubes, set side by side six feet apart, with two cross arms bolted on with U bolts. The span wires were three-eighths inch galvanized steel strand, one taken across the top cross arm and one on the bottom arm resting on iron saddles, screwed to the arm and directly back to five-eighths inch by eight-foot guy rods cemented into the rock, each strand was broken into at each end on the span side with a Brooklyn giant strand. The line wires were brought to the glass insulators on the lower cross arm and looped around the strain insulator and soldered to the steel strand. Each pole was back guyed with one-half inch strand to guy rods cemented into the rocks. The wooden towers were practically the same except that the poles were gained and the cross arms lagged on.

The government was building a road through the hills and orders were received that in each case, where the telephone line crossed the road stakes, the wires must be sixteen feet from the ground. This order caused consternation in the construction camp. There was nothing over a sixteen-foot tube on the ground. There was no method of satisfactorily welding them, but there was the order and it had to be done and a consultation of all the wise men in the different crews was called.

A plan shown in the illustration was finally adopted and worked out. A sixteen-foot three-inch tube was taken and a wooden plug inserted in the butt. The tube was set and filled and packed with sand to within four feet of the top and an inch of cement was run on top of the sand. A two- and one-half-inch tube was then cut to the proper length; the cross arm bolted on, and the tube slipped into the three-inch flue and run around with cement to the top. When the cement set there was a good solid job of splicing.

This line stands unique, due to the almost inaccessible character of the country through which it runs, and great credit is due to James P. Thorpe, the contractor, and his superintendent, George P. Brown, for the efficient manner in which the contract was carried out and the courtesy and promptness with which they met every suggestion made by the government engineers.

The line after completion was remarkably quiet and effi-

Headquarters Camp at Roosevelt, Arizona, United States Geographical Survey Engineers in Foreground.

cient in transmission and remained so for a week or ten days. At the end of that time the engineer rode into Headquarters camp and was asked what had gone wrong? They could not get the Arizona dam. There was an awful buzzing and rattling, and it had been so for twenty-four hours. It was O. K. on the upper dam section. The trouble was down the river; the engineer tested several times and each time the rattling was seemingly louder. Finally the line rider was called in and told to saddle up and hike down the trail and clear the trouble.

The line rider was known as "Slim," a long, lean Arizonian, preternaturally solemn, picturesque and characteristic in speech. In three or four hours the trouble cleared up and "Slim" was looked for to explain the cause. About nine o'clock that night "Slim" came gangling into the engineer's tent and folded himself up on a box and carefully rolled a cigarette, cocking his eye up at the engineer, he cautiously delivered himself.

"I reckon I shot up thet trouble some."

He was asked to explain.

"Wa-al, yu see, I hiked down the trail fer about twenty miles and didn't find nuthin', everything clear. Sa-ay! yu know where the line goes down in the holler at Fish creek? I got round that pint of rock and looked down at thet pole. Yu know it's a transpersition! There was a big, red-eyed, long-horned steer just a bellerin' and pawin' up the ground all around and kinder lookin' up. I rid closter to get wise and dang my buttons! ef there wan't a six foot rattler, head end wound three times around one wire and tail end three times round t'other and the little ole rattlers stickin' right up. Wa-al, I jist naterally figgered it out this here way, that steer had caught Mr. Rattler and histed him up on the wires and was a waitin' fur him to fall off. Mr. Rattler was jest naterally scared plum stiff and every time we took down the receiver and rung up we'd shoot the juice forcugh him and he was hangin' there jist rattlin' like h—l for help!"

"Slim" went on to say that he was so impressed by the reptile's intelligence that he had killed the steer and turned the snake loose in the hills.

The writer in closing wishes to pay a slight tribute to a class of men too often misunderstood, too often maligned—the engineers of the Reclamation Service, U. S. G. S.—the men who are working to reclaim the arid lands, intrepid, resourceful, knowing no such word as fail, who do their work under the most trying and heart-breaking conditions; the men who build roads where nature never intended a road to be, who plan canals, dams, power houses in the heart of the wilderness and do it uncomplainingly, who with all the wildness of the life remain courteous, considerate, gentlemen. To these men the writer most respectfully takes off his hat.

And to you who have never tasted the free life of the hills, or known them in their irresistible power and fascination—try it once, live it until it becomes inoculated into your system and you will then understand its charm—the weird charm of Arizona, the "Country God Forgot."

OFFICIAL BULLETIN NUMBER SEVEN.

In the official bulletin Number Seven sent out by the National Interstate Telephone Association attention is called to the fact that toll line maps have been begun for Wisconsin, Iowa and South Dakota, making nine states for which maps are at present being prepared. Others will be commenced during the next month.

The bulletin further states: "The Independent shield suggested in bulletin Number Five is taking with Independent companies. We recommend its general adoption in advertisements. It is catchy and to the point.

"The supply department is still furnishing standard toll signs and printed matter bearing the 'Official Shield.' Are you taking advantage of it, and helping to make it a success? Illustrated catalogue sent on request. Have you seen the gold-plated 'Official Shield' emblems? Samples, 35c each.

"A great deal of care is being taken in the selection of committees decided upon at the last meeting of the Executive Council. The make-up of these committees will be announced later.

"The Oregon Independent Telephone Association was formed at Portland on January 4. Full account will be found in another part of this issue.

"We wish to call the attention of the various state associations to the necessity of electing delegates to the National Interstate Convention to be held some time in June.

"We also urge Independent interests in states at present having no Association to organize as soon as possible, so that they may affiliate with the National Interstate, and be represented at the convention. States organized but not yet members of the Association should do their full share in forwarding Independent telephone movement by becoming members at once."

CHICAGO ELECTRICAL TRADES ASSOCIATION MEETS.

The Electrical Trades Association of Chicago held its annual business session and banquet at the Coliseum Annex on the evening of January 24.

Although business details were somewhat hastened by lack of time and the members desire to get to the Exposition, this meeting proved to be the largest attended and most successful which the Association ever has enjoyed. Mr. Frederick P. Vose presided at the business meeting and Mr. James Wolff officiated as toastmaster at the banquet.

Arrangements were very pleasing to the 130 or more who found places at the tables, but over forty had to be turned away for lack of accommodations, greatly to the regret of themselves and the Association. Reports were read which showed the Association to be in a very prosperous condition and rendering its members highly efficient service. These reports were received with great enthusiasm.

As a social event, also, the gathering was an unqualified success. After the serving of an excellent menu, toasts were proposed and cleverly responded to by the following gentlemen: Mr. Charles Wilkins of Philadelphia, president of the Patrick, Carter & Wilkins Co.; Mr. F. M. Pierce, manager of the Manhattan Electrical Supply Co., Chicago; Mr. Thos. R. Mercein, general manager of the Electrical Trades Exposition Company; Mr. W. S. Sisson of the D. & W. Fuse Co., Providence, R. I.; Mr. J. W. Phelps, Sr., of the Hy-lo Co., Detroit; Mr. S. E. Kennedy of the Central Electric Co., Chicago; Mr. A. B. Conover of Jno R. Roebling's Sons Co., Chicago; Mr. H. L. Walker of the H. L. Walker Co., Detroit; Mr. Henry R. Parsons of the Western Electric Co., Chicago, and Mr. F. B. Uhrig, manager for the Western Electric Company at Kansas City.

Mr. James Wolff, president of the National Association, was unanimously re-elected as Chicago's representative in that body and new officers for the Chicago Association were chosen as follows:

President, Frank S. Beardsley of the Beardsley Chandelier Manufacturing Company; vice-president, Seymour Guthrie of the Kellogg Switchboard & Supply Company; secretary-treasurer, Frederic P. Vose, attorney. The above gentlemen, ex-officio and E. R. Gilmore of the Western Electric Company, Thos. I. Stacey of the Electric Appliance Company, and S. E. Kennedy of the Central Electric Company were elected directors.

The South Dakota Telephone Association held its annual convention at Sioux Falls on January 11 and 12. There was a large attendance and the meeting was an interesting one.

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EDITORIAL DEPARTMENT

CHEER UP!

A MAN in the telephone business has no temptation to be jealous of a neighbor who makes breakfast food or fertilizer, unless perhaps the other fellow is getting rich faster. But a telephone person does occasionally feel a qualm of disturbance inside if a friend in some other phase of electrical industry pokes fun at the "toy telephone" and its varied interests.

Cheer up! We are getting a few real statistics at last, and they show, and will show, that the toy is beating all the others. There is still an enormously greater rate of growth in telephony than in electric lighting; than in electric traction, for all of the great expansion of inter-urbans; than in electric power production, transmission and consumption.

We are beating any one of them considered alone, and in a little while we will beat the bunch.

Why not? Every other electrical phase but ours has powerful immediate competition. Electric lighting competes with oil, with its gas and gasoline by-products; electric traction competes with steam, and presently, perhaps, with the hydro-carbon go-cart. Electric power, even from water, competes with every other local sort. But the telephone has no competitor but perhaps the telegraph, and day-after-tomorrow it will swallow that. Cheer up!

SECOND-HAND EXPERIENCE.

THERE are two ways of guiding a career; by getting experience at first hand and by observing the experiences of others. A pioneer in any region must get his own knowledge of his surroundings, but those who come after him may do well to get what they can out of his mistakes, and so save time and trouble.

The early Independent companies took the physical telephone art about as they found it, and worked it out to a point where they have nothing whereof to be ashamed. The time is very near when their ancient enemy must be prevented, by what means are possible, from appropriating their designs and methods to the betterment of its already antiquating ways.

This process of reversal is as old as time. It repeats itself all about us, and wisely may be counted on as a certainty of succession. It is the red-headed office boy at three dollars a week that after a while comes to own the whole works.

But if he is a wise youngster he will be watching the antics of his elders, and will try not to repeat the blunders and inherit the consequences of at least the bigger failures about him.

The early Bell and the early Independent companies were small ones, covering only one, or at most a few, exchanges. Consolidation into companies operating a group of towns and their own lines between them came about in the first ten years of Bell existence. Independents are repeating the process. The biggest error of the Bell companies in regrouping and afterwards re-officering their properties was in overlooking the effect on the employes. The people who really make the telephone service are not presidents and general managers, but the larger lot who are near the public and who do things with their hands or immediately direct those who do. Every time a reorganization is rumored, there is restlessness and doubt to the last corner of the organization. Every time re-organization actually takes place, there is real demoralization throughout. Maybe the final results are for the better, and maybe economy comes at once. But the rank and file is loyal to the bosses who build and do, as against those who consolidate and rearrange.

A public-serving company, not long ago, suffered reorganization after years of successful operation. Its service at the time of the change was good, but the costs of its operation were not the lowest. The new regime knew its business and made but a few radical changes. Yet the whole industrial structure was wrenched and the immediate

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result was a period of poor service inviting and getting a beautiful clamor of public disapproval.

The causes are not vague. The more highly-bred a horse, the quicker he will go to pieces in fear of the whip. Even a dog will bite a stranger just because he is a stranger. The best results come from concerted action in a routine that is just a happy medium between the worn-out and deadly-dull, and the new and unfamiliar.

STREET TELEPHONES.

THE finest system of street telephones in the world, the most conveniently and comfortably arranged, and having the most numerous booths, is found in Stockholm. In that city the telephone has been grafted on the daily life of the inhabitants until it has become indispensable. Street telephone pavilions are found at every cab stand, theater, restaurant, and in every thoroughfare, and they open automatically by dropping a coin into a slot. The booths are of attractive design and architecture. The floor is several inches above the pavement or ground, as the case may be, so the person using the telephone stands out of the damp in the most inclement weather. Each station has a gas jet which is kept lighted at night. Telephone men in this country find much that is instructive in the telephone system of Stockholm. Its system of street telephones is of great value to the telephone user. A number of American cities have street telephones installed or building, and it will be but a comparatively short time until the street telephone in this country will be as common as the letter box.

THE ELECTRICAL SHOW.

THE Electrical show which closed at the Coliseum on January 27 was one of the most successful expositions of its kind ever held in the world. For two weeks the Coliseum was crowded every afternoon and evening and on several days the crowd was so great it was necessary to close the doors and turn hundreds of people away. On attendance all records were broken. The Coliseum management stated that this exposition drew larger crowds than any that had ever been held in the building. Nearly two hundred thousand people saw the wonders of electricity in almost every conceivable form, as displayed by the manufacturers from all parts of the United States. Some idea of the magnitude of the show may be gleaned from the fact that the capital invested in the different manufactories represented exceeded $300,000,000.

Countries as far away as China send representatives of the government to inspect and report on the electrical progress in the United States, and from almost every country in the world representatives or visitors were in attendance.

The President of the United States opened the show by wireless telegraph at 8 o'clock on the evening of January 15 and the lights were turned out on the evening of January 27 in the presence of the most enthusiastic crowd that has even been within the Coliseum. It remained for Chicago to teach the world a lesson and show in one building the wonders of electricity as exemplified in an exposition covering every phase of the industry—heat, light, power, transmission and all the things electricity does for mankind were shown. From the smallest electric light to the largest dynamo; a man demonstrating with a million volts; the wireless telegraph taking messages from the air; a race of telegraphic messages around the world, these were some of the features. And the omnipresent telephone was everywhere in evidence.

The show demonstrated, more than anything else could, the wonderful things that are done by the aid of electricity. And its commercial value will be inestimable to electrical manufacturers throughout the world. The plan of making the show an annual affair will meet with the approval of everybody interested. January 14 to 26, 1907, are the dates set and exhibitors have nearly all signed for space in the 1907 show. Many companies making application for double the space occupied at this show, and one requesting six times the number of square feet his firm occupied in the exhibition just closed. It is believed the Coliseum will not be large enough for next year's show and that an overflow building will have to be secured.

The success of the show was due to the fact that every electrical concern in the country of any size was interested as a stockholder, and these stockholders, some sixty in number, were made an advisory committee, aiding the officers and board of directors in every way possible. However, upon the officers and directors devolved the real work of the enterprise. Particularly to President Samuel Insull, Homer E. Niesz, chairman of the publicity committee; E. B. Overshiner and Chas. E. Gregory, vice-presidents; Thomas R. Mercein, general manager; Charles R. Macloon, press agent; Stewart Spaulding, secretary, and H. B. McMeal, director, is due the credit for the success of the venture. These men worked with a single purpose and deserve the credit for the wonderful success of the first annual electrical show.

The Electrical Trades Exposition Company, under whose auspices the show was given, has done a great work, the importance of which will become more and more apparent as the years go by.

GREAT TELEPHONE DEVELOPMENT.

IN ITS review of the electrical industry for 1905 the *Electrical World* in its New Year's issue speaks editorially of the wonderful telephone development in the United States. The editor says:

"One of the significantly large developments in the electrical field in 1905 was that witnessed in telephony. The growth there was probably much greater than in any other branch of electrical application. It might have seemed that the violent outburst of activity noted four or five years ago would have worn itself out or at least quieted down into sober advance, but the activity is so steadily maintained at a high rate it would appear to be normal rather than abnormal. At least there is still every sign that the industry is far from the point of saturation, and he would be a bold man who would predict just what that point is likely to be."

As TELEPHONY has frequently pointed out there seems to be no end to the wave of telephone development, and it is a safe prediction that the present year will break all previous records for the amount of telephone work done, and the number of instruments installed. At least in the Independent telephone field 1906 will be the banner year.

ASSOCIATION MAPS.

THE National Interstate Telephone Association realizing the necessity for, and the importance of such records, is preparing maps, by states, of the Independent toll lines throughout the country, using only reliable data vouched for by Independent operators. When completed, these maps will be accurate, up-to-date records of the Independent development and will be printed in groups of two or three states for general distribution at a nominal price. The original tracings will remain on file at the association office, and be constantly kept up-to-date, new editions of the printed maps being issued from time to time.

This work has been undertaken on a scale never before attempted, and the hearty co-operation of everyone interested in Independent telephony is desired. The great value of these maps to all Independent telephone men make it imperative that all possible assistance be rendered to the association in securing the necessary data. It is requested that all operating companies send at once a map of all toll lines and a list of companies operating toll lines in contiguous territory.

It will not be necessary to go to any particular trouble or

expense in preparing sketches. All the association requires is a rough, accurate sketch of lines, showing exchanges, toll stations and connections. The association has secured special quarters for its draughting department, engaged an experienced draughtsman and other necessary help to properly take care of this work, and will be under considerable expense until it is completed; so will therefore appreciate prompt action in this matter, so that the expense may be kept as low as possible and there may be no unnecessary delay in completing the state maps.

The association is depending upon the co-operation of every operating Independent telephone company and in as much as these maps will be of great interest to all Independents, TELEPHONY strongly urges that the desired information be sent to the association at the very earliest moment.

A LETTER FROM MR. HARRIS.

CHARLES O. HARRIS, who has such a host of friends in the Independent telephone business, and who is esteemed by TELEPHONY as a good friend and enthusiastic worker in the Independent cause, has written a letter to one of our contemporaries, and has been good enough to send us a copy which he says is self-explanatory. The letter is too long and we believe too hastily written to be published in full in our columns. Its general purport is a dig at TELEPHONY for publishing articles which Mr. Harris believes to have been inspired by Bell interests. The particular article which Mr. Harris objects to is one by Herbert Laws Webb, entitled "Municipal Telephony in Great Britain," which was published in our January issue.

We have no excuses to offer for the publication of this and similar articles. The views expressed are those of Mr. Webb and not necessarily ours. Mr. Harris' grievance in general seems to be the publication of any truth, no matter of what character, that would in any way benefit "our friends, the enemy." In other words, if the conclusions of his letter are taken literally, any truth which would benefit the Bell company should be carefully supressed even though a knowledge of this truth might be of even greater benefit to the Indpendent companies.

TELEPHONY stands for truth, regardless of whom it may hurt or whom it may benefit. To suppress truth is usually a very narrow gauge policy in the long run. Taken in its broad view, we are absolutely unable to see how an expression of opinion from anyone on the question of municipal ownership as applied to telephony can be of any greater benefit to the Bell company than to the Independents. In fact it would seem that a proper understanding of the municipal ownership question as applied to telephony is more likely to benefit the Independents than the Bell, since in this country it is believed that Independent companies are more liable to fall into the municipal ownership pitfall (if it be a pitfall) than are any of the Bell companies.

As stated, the views expressed in Mr. Webb's article are not necessarily TELEPHONY'S views, and if wrong they should serve to bring out a discussion of this important subject among Independents. By means of such discussion the real truth is much more likely to be reached than by keeping constantly in the dark for fear one may see an unpleasant light. Whether Mr. Webb is wrong or right, it is believed that TELEPHONY has done a real service to Independent people by thus opening up a discussion of a situation which, from its political, its social and its technical aspect, is of importance to all Independent telephonists.

Mr. Harris in his zealous advocacy of Independent telephony allows his enthusiasm to cloud his logic. He says: "Any cause that has for its object the overthrowing of that vicious monopoly, the Bell company, is worthy the encouragement of every Independent telephone man. All telephone interests not Bell are Independent, irrespctive of the locality or who is operating the plants." This sounds very fine. We might say that any cause which will overthrow the Bell company is worthy of our encouragement, even though it overthrows us also.

TELEPHONY admires Mr. Harris; it admires his work, not only as a technical man but as a good Independent telephone man. It believes, however, that the policy he advocates of keeping all truth that might in some way aid our enemies from ourselves as well as our enemies would not benefit the cause for which he has so ardently worked. We believe that that old biblical saying "Let there be light" is a good one. The Bell companies have long suffered under the policy of keeping things in the dark. Perhaps that is the greatest distinction between Independent and Bell telephony.

The one pertinent lesson that we hoped would be taught by Mr. Webb's article, seems to have been overlooked by Mr. Harris, and that is the crudeness and inefficiency of the telephone apparatus in use in Great Britain. It was a direct tip to American manufacturers to go after this business.

In speaking of the telephone equipment in the United Kingdom *Electricity* of London in its its issue of January 5, says editorially:

> It is a matter of interest if not regret that during the last year it has been found necessary to import large numbers of telephone instruments from Sweden. It does not appear, judging from the imports of this class of goods from Sweden or Germany, that our manufacturing facilities are equal to the demand. So far as Sweden is concerned, she is but reaping the fruits of the enterprise of those interested in the manufacture of such instruments, for Stockholm has acquired, and is likely to retain for a considerable time, a reputation for high-class telephonic apparatus.

The same editor in an earlier issue said:

> It is extraordinary, but nevertheless true, that we Britishers lag sadly behind our European and American contemporaries in the adoption and adaptation of new ideas and labor-saving appliances to the needs of modern industry and commerce. This indisputable fact has been exemplified of late years in all branches of engineering, and recent advices from Paris would tend to show that this ultra-conservatism is to be repeated in connection with telephone development. In some respects the waiting game pays best, inasmuch as the last country to adopt a new idea or invention profits by the dearly-bought experience of those who have meanwhile profited by its adoption at an earlier stage. There is, no doubt, much to be said on both sides; but I am of the opinion that, having regard to the rapid change and development of electrical science and its applications to the present-day needs of mankind, a waiting policy has limits beyond which it is unwise, and, in fact, suicidal to linger.
>
> Reverting to the particular subject mentioned above—namely, telephony—let us consider, for a moment, how far these remarks apply. The National Telephone Company, which is now passing through the final stage of its existence, has probably experimented with all recognized systems of telephone intercommunication, up to the common battery, or "central energy" stage, which latter has already been reached and passed on the continent and in America. Whilst the latter country has adopted the central battery system of telephone exchange equipment for some years back, our old friend the National has only equipped one or two of its many exchanges with the system, and, even in these examples, the adaptation has been more in the nature of an experiment than anything else. America, mind you, has, as already stated, been working its principal telephone switchrooms for years on this system, yet it is only during the past five years, or even less, that the only English telephone company has deemed it worthy of consideration, and it is even now passing through the "nursery" stage in this country.

From the above it will be seen that it is not only the municipal plants that are poorly equipped, but the Bell, as well, is using equipment of so poor design and construction that good service is impossible.

Independent telephone manufacturers build the best telephone apparatus and equipment in the world, and the world is their field. It is the province of a telephone trade paper to point these things out.

Mr. Harris knows the Independent movement is too strong to be affected by the opinion of one man or many men. We have come to a time when we want to know the truth about the telephone business in this and other countries, and this publication will tell the truth and still be loyal to the movement in every sense of the word. We believe Mr. Harris even will acknowledge this.

BELL STOCKS.

AT THE request of the Boston News Bureau, J. W. Bowen & Co. have compiled the following table of quotations for stocks of important American Telephone & Telegraph Co. sub-companies. The table shows comparatively the prices on Jan. 1, 1906, and Jan. 1, 1905:

	1906.	1905.
American Tel. & Tel. Co.	137½	146½
New England Tel. & Tel. Co.	132	138
Chicago Telephone Co.	138	145
Bell Telephone Co. of Philadelphia (par $50)	61½	63
Pacific States Tel. & Tel. Co.	110	112½
*New York & New Jersey Telephone Co.	157½	170
Cumberland Tel. & Tel. Co.	122	120¾
Central District & Printing Tel. Co.	140	130b
*Bell Telephone Co. of Canada	157	160
*Bell Telephone Co. of Buffalo	105	101½
Southern New England Telephone Co.	145	140
Colorado Telephone Co. (par $50)	51	50
Bell Telephone Co. of Missouri	159b	155b
Hudson River Telephone Co.	95	98b
Missouri & Kansas Telephone Co.	80½	82
Pennsylvania Telephone Co. (par $50)	51	50
Chesapeake & Potomac Telephone Co.	46b	55
Rocky Mountain Bell Telephone Co.	94	92½
Nebraska Telephone Co.	101½	102½
Providence Telephone Co. (par $50)	119	108
New York & Pennsylvania Tel. & Tel. Co.	40	40
Pioneer Telephone & Telegraph Co.	100	.....
Western Telephone & Telegraph Co., common	14	20
Western Telephone & Telegraph Co., preferred	92½	100

*Ex-rights.

Asking prices are given where last sale is uncertain.

It will be seen from the above table that during 1905 the majority of the Bell sub-licensee stock declined, notwithstanding the fact that it was the greatest year ever known in the telephone business.

MONOPOLY DOOMED IN CONNECTICUT.

THE Hartford, Connecticut, *Post*, in a leading editorial, calls the attention of the people of Connecticut to the necessity of curbing monopoly in general and the Bell monopoly in the state, in particular. The editorial is so pertinent that we reproduce it herewith in full. New England has been cursed by monopolies for so long a time that it is a promising sign to note the attitude of the daily press of New England. In every other section of the United States the Independent companies have gained leadership over the Bell, and it is to be hoped New England will enact such laws as will make it no longer possible for the Bell company to hold a monopoly of the telephone business. The editorial follows:

It is not fair to the people of the state that there should be no competition in the telephone business. The Southern New England Telephone Company at present enjoys the exclusive privilege of conducting telephones in the state. It does only what it is compelled to do, and charges all that the business will stand. Its officials are doing just what any other officials would do if they had a monopoly. It is not the fault of the officials who manage the telephone monopoly, but of the monopoly itself.

There is only one way to regulate it, and that is to let down the state bars and permit telephone companies to carry on business in Connecticut. Competition will improve the service and lower the rates to subscribers, as it has in every place where it has been tried.

It is gratifying to know that the State Grange is to continue its fight against the monopoly, as shown in its anti-telephone monopoly resolution adopted at the meeting just closed.

A good fight was made in the last legislature, but the corporations combined forces and the common people got the worst of it all along the line.

There will be another legislature a year hence and it behooves the people to begin their fight for anti-monopoly legislators in every district.

The New York legislative investigation of insurance scandals shows how corporations have used money to corrupt members of the legislature. Of course, the honest Connecticut lawmaker would not consider selling his vote. And the honest corporations of this state would not for a second think of buying a vote.

The best way to avoid temptation, however, is to select men for the next legislature who are opposed to monopoly in general and telephone monopolies in particular. Find out how they stand on the telephone monopoly before allowing them to be nominated. In this way an anti-monopoly telephone legislature can be elected, and anti-monopoly telephone legislation can be secured.

The telephone monopoly must go.

THE TELEPHONE HABIT.

UNTIL within a comparatively few years the world got along very well without the telephone, but its use has now become so general that it seems almost impossible to get along without it. In the early days of the invention its promoters predicted that within twenty-five years three per cent of the entire population of the country would be users of telephones, little dreaming that the popularity of the invention would spread so rapidly as to bring it into almost universal use within a decade. As late as 1889 it was predicted that some time in the distant future there would be as many as three telephones in use to every 100 persons in the country, but now the expansion has been so great that it is freely predicted that in a short time there will be one telephone in use for every five persons in the United States, which would be practically one for every family in the entire country.

It is said that the first telephone was introduced in Wall street in 1878. Now there are more instruments in use in Manhattan and the Bronx than there were at the beginning of the present year in the entire city of Greater New York. To-day the city of New York uses more telephones than any other city in the entire world, and their use has become so absolutely essential to the modern business man that it seems next to impossible to get along without them. Chicago is second in the number of telephones in use. In all other large cities, nine-tenths of the small business transactions are conducted by means of the telephone, while details are more frequently arranged in that way than in any other. The economy of both time and money made possible by their use has brought prosperity to numerous small business enterprises that could never have succeeded without their aid, so that the telephone has come to be a real benefactor to the race. The Independent movement has been the great factor in popularizing the telephone and bringing it within reach of practically all the people, and the credit of the wonderful development in the United States in the last ten years is due to the advent of Independent companies.

TELEPHONE COURTESY.

THE madam of the domicile took the telephone to answer a long harrowing ring. Putting the receiver to her ear, in a soft voice she said, "Well," and "yes, this is 27-—" and then quickly dropped it as if a stroke of lightning had rushed through it. "Wasn't that mean?" she said. "I told that woman—yes, it was a woman—who I was, and she said, as if she was angry with me, 'I don't want you,' dwelling on the you as if she could bite my head off if she had the chance."

And the madam went about her work with a real sadness in her heart, because somebody had treated her very meanly. This is but one case of the scores that occur every day. It teaches that there is a lack of courtesy in the world, and a good deal of meanness in the place of it.

But the incident gives a hint which should be heeded. There is no place where real courtesy can be so well shown as over a telephone. One may feel a sense of shame to be rude in another's presence, but with the telephone, all one can go by is his good nature, and innate purpose to treat all kindly. If he hasn't this he may fall.

Courtesy is not a formality; it is a virtue, a phase of religion, and a person only proclaims himself a heathen, when he hides behind a telephone box to speak a harsh word to one who means no wrong.

DIGEST OF TELEPHONE PATENTS

By Edward E. Clement

807,528. Transmitter and Transmitter Arm Connection; E. E. Yaxley. This is a very familiar type of transmitter head having a boss fitting into the split end of the arm, which is locked by clamping screws. The circuit is completed through spring plunger contacts in the arm. Patent assigned to American Electric Telephone Company.

807,575. Means for Restoring Ring-Off Drops for Switchboards; E. McLean. A lever in the plug seat kicks up the drop shutter. Patent unassigned.

807,596. Telephony; E. A. Buell. A party-line scheme wherein an operator can tell who is listening in or eavesdropping. Also selective lock-out means, consisting of step-by-step switching device worked by reversing current over one or the other side of line. The testing means comprises a generator and switch with a special signal at central whereby the operator may try one station after another, until she finds one which is not normal. The contacts are disturbed by listening in. Patent assigned to Selective Signal and Telephone Manufacturing Company, Sycamore, Illinois.

807,626. Signal Switch; G. H. Manners. A spring switch on the inside of the telephone box and a push-button sticking out to operate it so as to ground one side of the line while breaking the metallic circuit. The idea is to signal central without calling the other subscribers, and *vice versa*. Patent unassigned.

807,806. Telephone; J. H. Boyd. This is a mechanical or acoustic telephone, with a device for plucking the wire violently to make a call. Patent unassigned.

807,859. Annunciator; J. and W. Patten. Annunciator targets carried on cores moved to and fro by solenoids. Patent unassigned.

807,870. Pole-Changing Device; H. O. Rugh. Application filed June 2, 1902. The patent shows pole-changer with a relay in the ringing circuit controlling the working magnet and acting like a vibrator. Patent assigned to Edward C. Hennis of Sandwich, Ill.

807,942. Telephone Directory; E. N. Lake. This patent was solicited by Mr. S. G. McMeen, the well-known expert. A metal frame is attached to the desk set standard and carries a set of index cards protected by a hinged metal front plate. Patent unassigned.

807,962. Carbon Plate for Protective Devices; G. W. Pickard. This covers the plate for the same device, and is assigned to the same parties.

807,963. Protective Device; G. W. Pickard. A combined heat coil and high potential arrester having carbon blocks impregnated with a binding material. Patent assigned to the American Bell Telephone Company.

808,386. Telephony; I. Kitsee. A party-line scheme having telegraph instruments at each end for calling. Intended for railroad use. Patent unassigned.

808,438. Telephony; A. G. Davis. It is a pity to dismiss this patent with only a word. It is worthy of careful reading, although the patentee at the time of filing the application, in 1897, had not attained the high position he has since taken in the electrical field. Mr. Davis is the head of the patent department of the General Electric Company. Years ago he had charge of alternating current work in the Patent Office. In the present case he uses alternating current in his telephone circuit, and produces the necessary current changes by "making and breaking" resonance. Patent unassigned.

808,454. Telephone Attachment; P. Kammerer. A call register attached to the transmitter arm. Patent unassigned.

808,571. Electric Signaling System; C. G. Otwell and I. H. Melvin. Telephones included in the circuits of a block signaling railway system. Patent unassigned.

808,600. Telephony; A. G. Davis. Same as the preceding invention, one patent claiming the apparatus and the other the method. Patent unassigned.

808,723. Annunciator; A. Carliss. Single coil drop annunciator for express boards, self-contained unit, shutter pivoted on front end, armature lever comes forward and when attracted throws up shutter. Patent assigned to American Electric Telephone Company.

808,834. Relay; C. L. Goodrum. This relay is very remarkable in some particulars. It is not only exceedingly economical to manufacture, but it is exceedingly compact and said to be very quick in its action. The front and back yokes are bent toward each other along the top of the coil, the armature being balanced on a knife edge formed on the front yoke, and the springs extending over it from the rear yoke.

The patent is not assigned on its face, but is understood to be included with a number of other inventions of a remarkable nature invented by Mr. Goodrum and Mr. Lattig, his partner, in automatic exchange apparatus, which are to be manufactured by a new company with heavy financial backing.

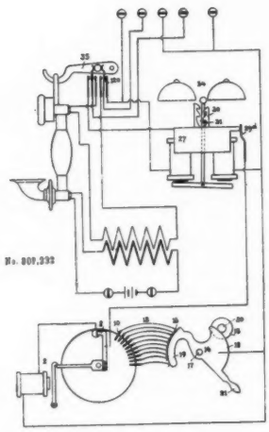
808,868. Telephone Signaling Apparatus; K. H. Poyas. A receiver having two buttons in the shell working springs to disconnect the coils and ground either side of the line. Intended for linemen's test sets. Patent unassigned.

808,983. Telephone Holder; L. S. Hallowell. A pivoted bracket having a rod run through a tube and working like parallel bars to keep the cradle level when the arm is pulled down. One-half assigned to Thomas L. Ricarte, Philadelphia.

809,060. Ringer for Telephone and the Like; E. R. Hobbs. A polarized ringer having its armature hung on springs supported in brackets adjustable on the frame. Patent unassigned.

809,186. Telephone System; H. A. Judge. This is a talking circuit *per se*, although not by itself. The invention is almost certain to excite considerable interest and curiosity for two reasons: First, the inventor is a very talented and able member of an order celebrated for its able men (he is the Rev. Henry A. Judge, S. J., a professor in Georgetown University); second, some very remarkable results are said to have been attained with the circuits designed by Father Judge. A transmitting device and a source of current are connected up, and across the transmitting end is bridged an agency such as a coil having an iron core wound with many turns but of low resistance. An induction coil may be employed or this shunt coil may be caused to discharge itself directly into the line. A condenser is included in the receiver branch, and the Father states he has obtained very satisfactory increased effects by using several discharge coils in successive branches. The arrangement may be adapted to common battery work, and several modifications in the coils may be employed. Patent unassigned.

809,232. Semi-Automatic Telephone Exchange System; A. T. M. Thomson. There is no automatic switching in this system, but the operators have indicators which are worked to show the numbers wanted by means of apparently complicated signal sending apparatus at each subscriber's station. There is too much special apparatus. Nineteen sheets



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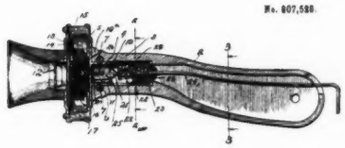

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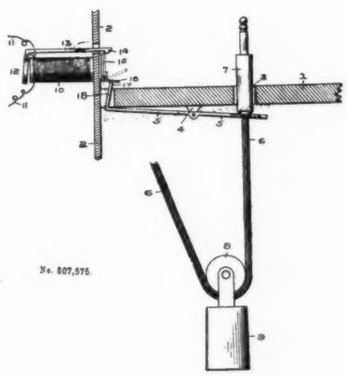

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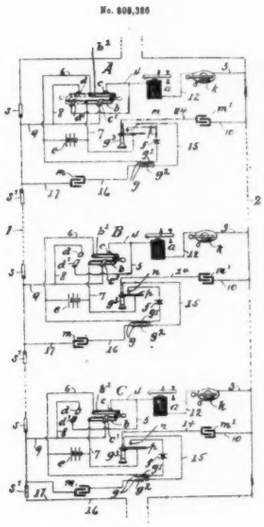

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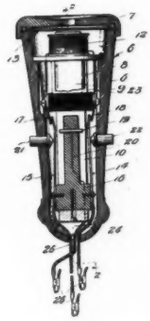

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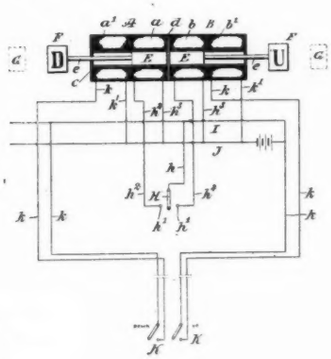

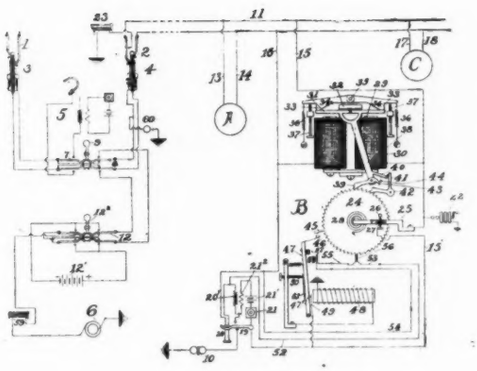

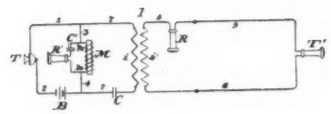

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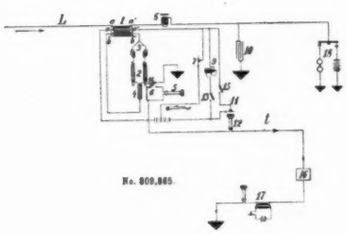

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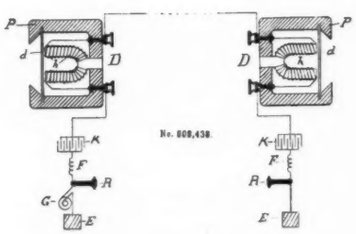

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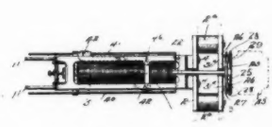

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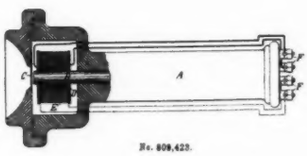

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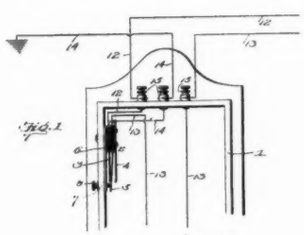

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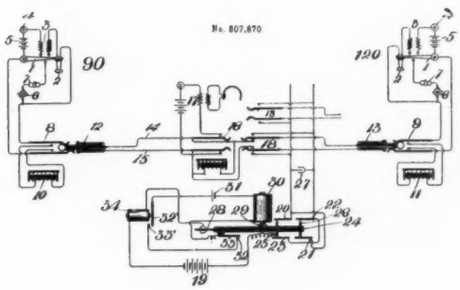

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of drawing and nearly forty figures, with ten pages of specification. Claims somewhat limited. Patent unassigned.

809,311. Fire-Proof Wire; A. M. Lougee. This is a similar wire having layers as follows: rubber fabric, fire-proof packet, rubber cement, wire armor, fire-proof coating. Patent unassigned.

809,312. Process of Making Fire-Proof Conductors; A. M. Lougee. This is the method patent for the same article. Patent unassigned.

809,313. Protected Conductor; A. M. Lougee. A wire insulated with fire-proof, water-proof, nail-proof, and time-proof layers, some of them being of woven steel wire armor. Patent unassigned.

809,379. Adjustable Support for Telephones; H. L. Knight and B. W. Sweet. Everybody has to have a bracket telephone these days. This has the familiar parallel bars, but no gears, the standard having rotary contacts in the base. Patent assigned to the Williams-Abbott Electric Company.

809,423. Telephone; C. G. Burke. A receiver having primary and secondary windings connected to line in series. Patent assigned one-half to John Q. A. Whittemore.

809,468. Flexible Electrical Conductor; G. E. Schmidmer. Mr. Schmidmer lives in Nuremberg, in Bavaria. He makes a flexible cord by winding the conductor about one flexible insulator and then winding the resulting twist about a flexible core of twisted cords. Patent unassigned.

809,831. Telephone Transmitter; J. Z. Miller. A granular transmitter of the corn-plaster type. Claims very specific. Patent unassigned.

809,865. Combined Telegraph and Telephone System; C. Turchi. This is Carlo Turchi, of Ferrara, Italy. The scheme is for a composite system having separating coils and condensers to distinguish the telegraph from the telephone currents. Patent unassigned.

INDIANAPOLIS TELEPHONE ELECTIONS.

In pursuance of the intention to keep the affairs of the Indianapolis Telephone Company and the New Long Distance Telephone Company under local control both companies Saturday made changes. The officers and directors of the Indianapolis Telephone Company are now as follows: President, Harry S. New; vice-president, George C. Hitt; secretary and treasurer, George C. Hitt; general manager, A. L. Tetu; directors, Harry S. New, John H. Holliday, Cortland Van Camp, Jesse Fletcher, A. L. Tetu, Herman C. Stifel, James S. Brailey, Jr., A. H. Bauer and Ben Altheimer.

The officers and directors of the New Long Distance Telephone Company are as follows: President, Herman C. Stifel; first vice-president, Harry S. New; second vice-president, George C. Hitt; secretary and treasurer, George C. Hitt; assistant secretary, Charles S. Norton; general manager, A. L. Tetu; directors, Harry S. New, Medford B. Wilson, A. L. Tetu, Herman C. Stifel, James S. Brailey, Jr., C. M. Forster, Breckenridge, Jones and A. F. Ramsey.

While Mr. Tetu has been elected general manager of both companies, he still retains his position as general manager of the Nashville Home Telephone Company.

NORTHERN INDIANA MEETING.

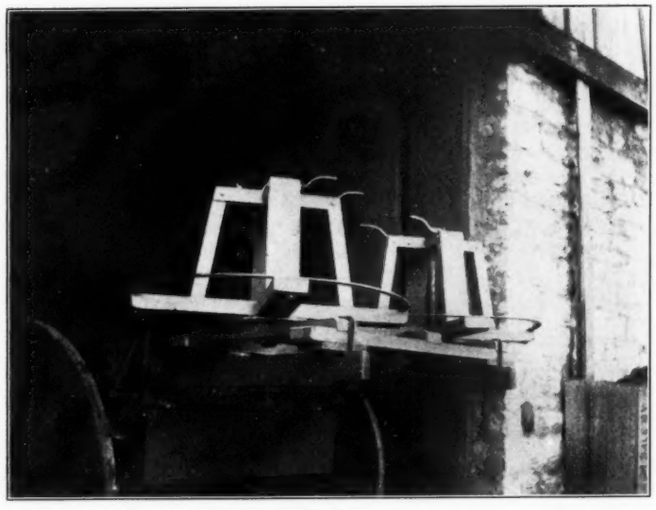
The Northern Indiana Toll Line Association will hold its annual meeting at Elkhart, Indiana, on February 13. The delegates will be entertained by the Chicago Telephone Supply Company while in Elkhart. Theodore Thorward is president of the association and Martin Crow is secretary.

FOURTH DISTRICT INDIANA MEETING.

The Fourth District branch of the Indiana Independent Telephone Association held a special meeting at Lafayette on January 5. Twenty-six Independent telephone companies of the district were represented. The principal question discussed was the advisability of certain Independent companies operating in the western counties of the state to enter into a sub-license arrangement with the Bell company with headquarters in Danville, Ill., for long-distance service. The proposition was disproved and a committee appointed to go to Danville, Ill., and arrange for Independent long-distance service, so as to accommodate the companies. It was made plain that no Independent company could join hands with the Bell company and retain its standing with the Indiana Independent Association. William Vesey of the New Long Distance Company of Indianapolis addressed the meeting on the latest phases of the Independent telephone situation in the state. Mr. Vesey said the cause was never stronger nor the companies in better condition than at present. The meeting was well attended and the interest manifested showed the Independent companies of the Fourth District to be in a prosperous condition.

TWO NEW DEVICES.

Mr. Louis Berve, general manager of the Ogle County Telephone Company of Rochelle, Illinois, is the inventor of two practical devices for use in telephone construction work—a wire reel and a pole hoister.



New Berve Wire Reel.

The wire reel, or reels, as will be seen from the illustration, are mounted upon a skeleton frame held in place by two pieces of two by four scantling bolted across to sides of wagon box. A temporary end gate is fitted in place of the regular one to keep tools and material from falling out.

New Berve Pole Hoister.

The reels proper can be lifted off independently of the main frame and can be attached to any ordinary wagon box. They are made of hardwood and will take almost any size coil wire. The special feature of the reels are that they take up no room in the wagon, allowing all the space in the wagon to be utilized for tools and construction material. Mr. Berve informs us that if there is a reel made which works better, made more durable, yet of light weight, he would like to see it. While not in the manufacturing business, he is prepared to furnish estimates for detail drawings upon application.

The pole raiser is an ingenious device which has been in operation for some time. The whole arrangement is shown in the illustration.

BALTIMORE & OHIO RAILROAD TELEPHONE SERVICE

By Mandel Sener

THE Baltimore and Ohio Railroad has gained the distinction in its progressive policy of being the first steam railroad in the world to reduce the movement of trains by telephone to a systemized practice, clothed with the best safeguards, as has been the telegraph train handling system that has been in operation for many years. The use of the telephone in this connection, having been demonstrated to be effective, the management of the road authorized its officials to avail themselves of this valuable auxiliary from time to time as experience proved it to be desirable, economical and in any way tend to safely hasten the movement of trains. This was followed by a conference of the dispatching forces held at Baltimore, and a set of rules and forms was arranged so as to reduce the method of handling trains by telephone to a standardized system. Charles Selden, superintendent of telegraph, was chairman of the conference, and it is the ultimate expectation that every non-telegraph station that has a passing siding will be fitted up with a telephone connection to the nearest telegraph office. This will enable the transmission of train orders from the telegraph office to the train crews at such sidings direct, or to an employe stationed there for that purpose.

Mandel Sener.

For some time the Baltimore and Ohio Railroad has been extending the use of the telephone for the transmission of ordinary business messages, connecting the division headquarters with the terminals of the divisions by means of the "composite" telephone method. This system admits of the simultaneous working of the wires telephonically and telegraphically without interfering with each other. Such circuits have been established between Chicago and Garrett, Ind.; between Garrett and Chicago Junction, Ohio, thus connecting up the Chicago division; between Newark and Chicago Junction; between Newark and Wheeling; between Wheeling and Fairmont; between Grafton and Wheeling; between Pittsburg and Wheeling and between Wheeling and Holloway, thus connecting the general superintendent of this grand division with the various superintendents and terminals with which he deals. Other circuits have been established from Grafton to Clarksburg; Clarksburg to Parkersburg, and from Grafton to Cumberland, thus completing the circuits for the division located at Grafton. There are also circuits between Baltimore and Brunswick, and Baltimore and Philadelphia for a like purpose.

In addition to these long circuits the telephone is used extensively in single track blocking and for the movement of yard engines and the connection of non-telegraph stations with telegraph stations by which trains are moved from the former to the latter where the ordinary telegraph orders are received. In this manner the telephone is used for single track blocking between Newark and Bellaire, Ohio. The telegraph offices average about eight miles apart and at many points the siding extends beyond the telegraph office a distance of about two miles. By having the telephone located at the switches, a train is allowed to use the passing siding up to the outlet switch. Then as soon as the train for which it has been held has passed, the conductor notifies the operator in the block signal tower and he is given permission to proceed with his train to the next block signal office. In this the blocks are practically cut down so far as main track use is concerned, just so much as the side tracks extend into the blocks. In some instances, it permits of the use of four miles of passing tracks, leaving but four miles of main track to be covered by the blocking. The result is that it practically shortens the block by one-half the distance and hastens the movement of traffic to that extent.

This method of using the telephone between Newark and Bellaire, over 104 miles of single track, has been in use for about three years with great success. It is a system that very much facilitates the handling of traffic and is perfectly safe in the movement of trains.

The Baltimore and Ohio Railroad will gradually extend the service to all points on its system where it will be beneficial. It is one of the various improvements being made by the Baltimore and Ohio, that result in thoroughly modernizing the operation of a large railroad system in the interest of the public and the company.

A Toledo man whose telephone has been out of order for some time was surprised to hear the instrument doing its duty again this morning. Rushing to the telephone he was surprised to hear a sweet feminine voice say, "Give me a ring and see if you can get me." The fellow is trying hard to find out who she is, so he can call, also her mother's name, so he can "see if he can get her," and the jewelry she prefers so he can "give her the ring."

MANUFACTURERS DEPARTMENT

MONARCH APPARATUS.

THAT rapid and consistent growth is not confined to the operating field alone, is illustrated by the progress of the Monarch Telephone Manufacturing Company of Chicago. Operating companies all over the country can tell of the wonderful increase in subscribers, and in toll and local business yet some manufacturing companies can show even as great growth. The tremendous demand for telephone apparatus has necessitated rapid increases in factory space and manufacturing facilities. A fair example of this is taken from the history of the well-known company mentioned above.

Five years ago the Monarch company was making but a single part of a telephone instrument, the ringer, and was occupying a small room approximately twenty-eight by thirty feet. Before the real work of manufacture began several months were spent in designing and perfecting this one part and the tools to build it. When it was ready for sale everything was in readiness to produce ringers at a rate of several hundred a day. Here it might be well to mention that this policy of designing and perfecting a piece of apparatus before placing it on the market has been noticeable all through the history of the Monarch company.

The ringer, with its simple adjustment feature and its substantial, efficient construction, found a ready sale. Manufacturers who did not make their own ringers took hold of it immediately as they recognized the qualities which have since proved it to be among the finest ringers produced. One company alone purchased over one hundred and twenty-five thousand of these parts in a period of a little over two years. Other concerns were almost as large buyers. The ringer as it was first designed and as it is still made is shown in Figure 1.

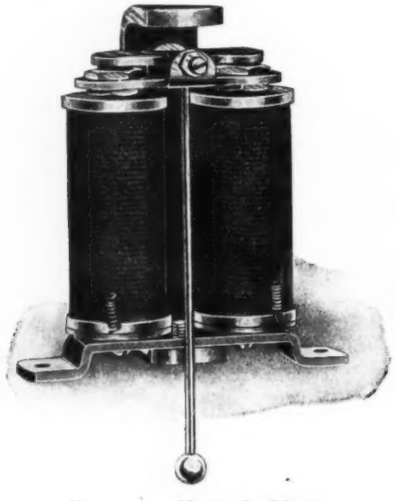


Figure 1. Monarch Ringer.

Four months after the start of the Monarch company, the first increase in floor space and manufacturing facilities was made. The room, which at first was large enough, was then much too small to accommodate the amount of machinery and number of men needed to produce the required output of the factory. Therefore the space was doubled.

At this juncture the demand for Monarch ringers was rapidly increasing, and the customers were asking why a generator was not made to go with the ringer. Mr. E. E. Yaxley, the treasurer of the company, and the man who has designed all Monarch apparatus, saw the trend of development and drew up a set of specifications and made blue prints of a generator the way he thought it ought to be built. Being satisfied that a generator so constructed would be a fit companion to the ringer, he started the work of making tools, dies, etc., and in the course of a few weeks turned out the first Monarch generator.

With a sample of this generator, Mr. Yaxley visited one or two of the manufacturing companies in Chicago and several in other cities. The result was beyond expectations. Firms who had been using other makes changed to the Monarch generator, as they saw and appreciated the simple and substantial construction of this new machine. The first rush of orders was so great that the output of the factory was sold for several months in advance. Realizing

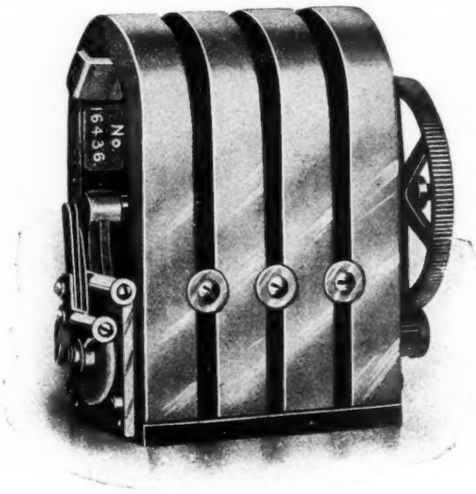


Figure 2. Monarch Generator.

that greater facilities for manufacture were needed, the Monarch company again increased its floor space, and nine months after the start of the concern it was occupying a room three times the size of the original. With the increase in floor space, a corresponding increase in machinery and facilities was made.

In Figure 2 the Monarch generator is shown just as it was made four years ago, and just as it is made to-day. It has never been necessary to change a single part of this generator. The telephone trade is probably familiar with the peculiarities of this machine, as it has been widely advertised. In all Mr. Yaxley's apparatus it will be noticed that two like metals are never placed where they wear on each other. The Monarch generator is fitted with a steel pinion and a brass gear. That the principle is right is shown by the fact that but one set of pinions and gears has ever been reported to the factory as worn out. This particular set was used on a switchboard generator, which was subjected to the most hard and continuous usage.

While some of the companies have recently designed armatures along slightly different lines from the armatures used in the past, the Monarch company has made no change. The armature in the Monarch generator will accommodate as much wire as any other armature manufactured to-day. Furthermore, the fact that the armature is laminated rather than solid adds efficiency to the whole generator. All of these points have been substantiated by actual tests, not only in the operating field, but in laboratories where testing facilities are at hand.

With two parts of a magneto telephone, it was not long before a broader field was opened to the Monarch company. Firms assembling telephones were so well pleased

with the ringers and generators that they demanded other parts to go with them. Consequently, Mr. Yaxley devoted a great deal of his time to perfecting a transmitter, and in April, 1902, he decided upon a type of transmitter which has since proven to be especially efficient. The story of placing the transmitter on the market is a repetition of that of placing the other parts before the buyers of this class of material. It was no sooner ready for sale than it was sold. It showed itself to be a transmitter that would give results.

One of the most important features of the instrument is the carbon chamber, which is formed of two mica diaphragms supported by a brass ring or collar. Each mica diaphragm supports a polished carbon electrode fastened to a brass disc and hub from which the connections are taken. An especially prepared granular carbon of extreme hardness is used within the chamber. The mounting of the chamber in the frame is provided for by a brass bridge and

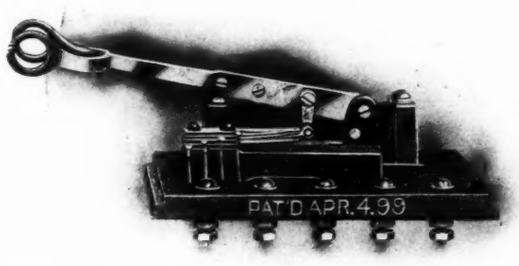


Figure 3. Monarch Hookswitch.

a cast brass front. The weight of these two parts is such as to preclude all chance of side tones or outside disturbances affecting the carbon chamber. The fact that two mica diaphragms are used in the carbon chamber makes the transmitter very efficient and especially desirable for long-distance service. The articulation is extremely clear, and the carrying powers of the instrument have been shown time and time again over some of the longest lines in the country. Another important feature of the Monarch transmitter is the small amount of battery consumed while in operation. This is one point that has been studied by Mr. Yaxley for a number of years, and the transmitter as it is made to-day will operate the company claims on a less amount of battery than any other instrument made.

With the three most important parts of the telephone instrument designed and built, the Monarch company start-

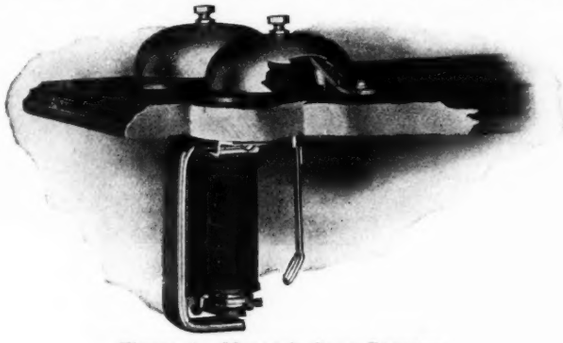


Figure 4. Monarch Gong Damper.

ed out to make the less important parts. Following the transmitter came a hook switch which is shown in figure 3. This switch is undoubtedly familiar to the majority of readers, as it has been commented upon for its simplicity of construction. The arrangement of the springs makes a switch that can hardly get out of order, and the arrangement of the mounting makes it possible to provide for almost any number of contact points.

As a natural sequence to the production of the majority of parts, the receiver, induction coil and lightning arrester were designed and built. Each one was taken up separately, and each one was perfected before another was considered. The idea then conceived was to build a complete telephone,

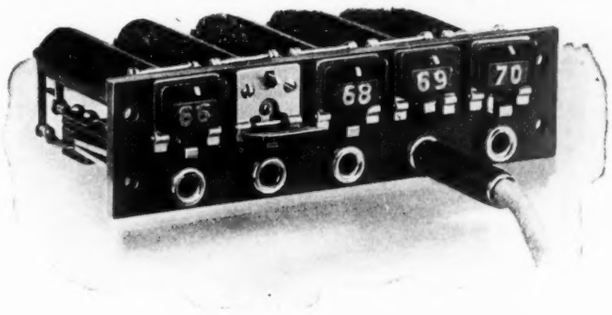


Figure 5. Monarch Drops and Jacks.

but to build it up of parts which in themselves had proven of superior merit. Thus, when the complete instrument came to be made, it was an experiment in no sense of the word. Each and every part in the instrument had been tried and tested for months before it was placed in a Monarch telephone.

The receiver is similar in appearance to a great many of the receivers now made, but there are one or two special features which should be mentioned. The cores of the coils can be removed from their mounting without breaking any of the connections. Furthermore, the coils are interchangeable, so that a coil from one receiver can be taken out and placed in another receiver without the need of any adjustment. This is due to the fact that the adjustment in every receiver is absolutely the same, and is permanent so that it cannot be changed.

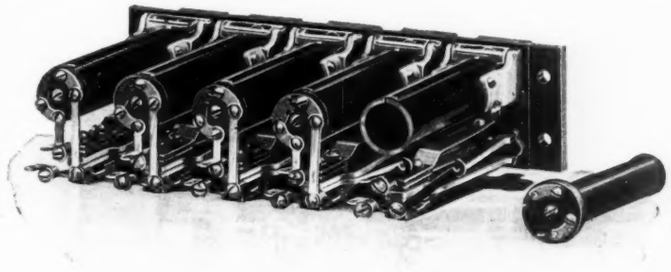


Figure 6. Monarch Drops and Jacks.

The induction coil is wound with silk covered copper wire over a core of soft Norway iron wires. The selection of the material used is an important item, as upon it greatly depends the efficiency of the coil. Two heavy fiber blocks support the core and winding. Terminals are provided for the connections within the telephone.

The lightning arrester is of the disc type, but is different from others, inasmuch as it is entirely self-contained. A heavy fiber mounting block supports the two line plates and the ground connection. The ground connection is carried from the carbon block through the backboard, and thence to the top binding post by means of a heavy brass strip. A mica disc separates the carbon block from the two line plates, while holes punched in this disc provide an easy path for lightning to ground.

January, 1903, saw the metamorphosis with the Monarch company. Up to that time all its efforts had been directed toward the production and sale of telephone parts to other manufacturers and to assemblers. In January, 1903, the complete instrument was placed on the market, and advertised. Mr. W. H. Trimm took up the sale of the apparatus

at this time. The parts business, or the business of supplying parts to other companies, was continued, but was made secondary to the business of furnishing complete telephone instruments directly to operating companies. The reputation of Monarch generators, ringers, transmitters, etc., had not been confined to the manufacturing field, but was known among the operators. Therefore, when the complete telephone was prepared it was not more than a few weeks until the capacity of the factory was taxed in order to take care of the demand. It was positively necessary to secure additional facilities, and the Monarch company there-

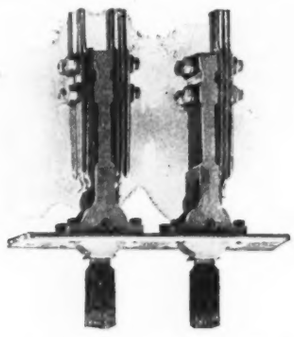


Figure 7. Ringing and Listening Key.

fore moved from 30 West Randolph street to 12-14 South Clinton street, Chicago. It secured two floors of a new building with light on three sides, and all the most modern conveniences for a manufacturing plant. These two floors looked very large, and, in fact, were large for the factory at that time. However, only a few months after the installation of the factory in its new quarters, every foot of space was utilized and was productive.

In the short period of a little over two years, the Monarch company had grown from a small concern occupying 830 square feet of floor space to a well organized, manufacturing plant occupying two large floors and with a total floor space of more than 12,000 square feet.

From this time on, the history of the Monarch company is undoubtedly somewhat familiar to everyone in the telephone field, but a few of the most important features may be touched upon. The complete telephone was soon an established factor in the operating field, as the ideas embodied in the instrument appealed to telephone men. The fact that the parts within the cabinet are mounted upon removable shelves which can be taken out without breaking any soldered connections, has won a great many admirers. This single feature probably interested more purchasers than any other one thing outside of the mechanical construction. The gong damper, which is shown in figure 4, was another new and valuable addition to an already well constructed Monarch telephone. While it did not add greatly to the efficiency of the instrument, it certainly was an improvement and a convenience.

The majority of people are the same in at least one particular. They are never satisfied, and probably never will be. This defect, if it may be so called, is noticeable in the members of the Monarch company, as they could not be satisfied with producing a good substantial, efficient telephone, but looked for other worlds to conquer. Naturally, the first thing to be considered was a magneto switchboard, and after thirteen months of careful study, test and investigation, Mr. Yaxley designed and produced the switchboard parts, which are meeting with great favor. On the last day of September, 1904, the first switchboard was sold to the Cannon Falls Telephone Co., Cannon Falls, Minn. This concern had been using Monarch telephones for several months, and was so deeply impressed with the construction and workmanship throughout the instrument that it had enough confidence in the Monarch company to place the order for the first board. The board was shipped shortly after the first of November, and was followed by many others to old customers who had bought telephones. During the fifteen months in which the Monarch board has been on the market, over 150 complete installations have been sold. From three or four switchboards a month the orders have increased to from twenty to twenty-five per month. The increase has been gradual. The history of the Monarch telephone parts has again been repeated with the history of the switchboard and its parts.

In figures 5, 6, 7 and 8, are shown the drops and jacks, ringing and listening key and the plug. The idea of having parts readily removable was carried out in the switchboard, as well as the telephone. The drop coils can be taken out of the shells without breaking any soldered connections and without disturbing the adjustment of the armatures. This feature is valuable, as any operating man will understand. The ringing and listening keys are made up substantially, and the material is, of course, the best. All springs are German silver, and all contact points are pure platinum rivets. The plug also shows the latest improvements. The fibre sleeve is loose, being held between a brass ferrule at the front and a brass shoulder at the rear. The ferrule can be removed by a small spanner wrench, which is supplied with each board, and the sleeve then slipped off. This opens to view the connections within the plug, as can be seen in the illustration.

It is now necessary to add another chapter to the history of the Monarch company, as with a magneto telephone and a magneto switchboard perfected and on the market, the only course is to take up the building of central energy exchanges. This statement may be a little previous, and yet it seems almost certain that the Monarch company will have a central energy multiple board for sale before another year is over. If such equipment is placed on the market, it will undoubtedly be up to the standard of all the other apparatus and it should find a ready sale.

January first of this year sees the Monarch company occupying three floors of the building into which it was moved two years ago last May. In addition, a store room has been rented and is being filled with stock and material. This gives the company a floor space of twenty times the amount occupied just five years ago.

Three years ago the company had no representatives on

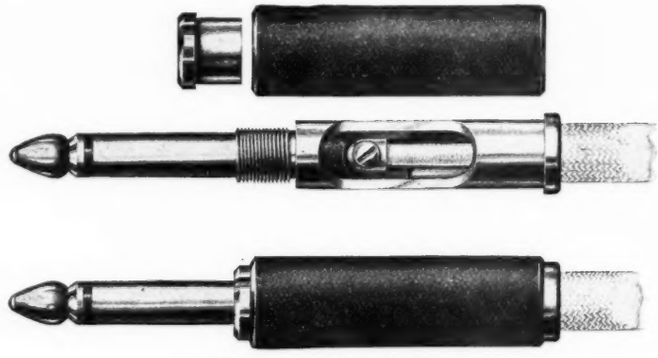


Figure 8. Monarch Plug.

the road. To-day it is thoroughly covering the central states with traveling men, who are not only salesmen, but practical telephone men. In addition to this selling force, the company has agencies located in the south and west. The Southwestern Electrical Engineering & Construction Company, with headquarters at Dallas, Texas, is handling Monarch telephones and switchboards, and is pushing their sale in the Texas field. The John J. Strohm Company, in Seattle, Washington, is handling Monarch apparatus, and is meeting with very gratifying success. The Edward F. Cannon Company is the third agent or representative of the

Monarch company, and is proving that Oregon will soon be among the best telephone states in the Union.

The growth of the Monarch company, as outlined in the foregoing, has undoubtedly been merited by the perfection of the apparatus, and the prompt and courteous treatment always given its customers. While the apparatus is unquestionably the more important factor, the other is by no means unimportant. The policy of this company has always been and is to-day to give its customers fair treatment and to ship all apparatus promptly.

While a study of the rapid increase of operating companies is undoubtedly of much interest to all those engaged in this line of work, a study now and then of the growth and the obstacles which have to be overcome by a manufacturing company during such rapid increase, should be of interest to all those in the telephone business. Without the operating man the manufacturer cannot live, and without the manufacturer the operating man cannot continue in business. Their interests are mutual and should always be remembered as such.

A NEW PARTNERSHIP.

H. S. Durant, well known in telephone and electrical circles, has purchased an interest in the old-established business of Geo. W. Conover, Chicago, and the firm name will be Geo. W. Conover & Co. The arrangement took effect on January 1.

Everyone who knows either Mr. Conover or Mr. Durant, and between them they know and are known by almost

George W. Conover.

everyone in the telephone and allied industries, will feel that this is an exceptionally promising partnership.

Both are unusually clever gentlemen personally, as well as active and experienced business men. Mr. Durant has had valuable training in both manual and automatic phases of telephone work, having entered the Stromberg-Carlson Telephone Manufacturing Company shortly after he left school, since which he has for some time past been connected with the sales department of the Automatic Electric Co. The magnificent exhibit made by the Automatic Electric Co. at the St. Louis Exposition was in charge of Mr. Durant during the entire fair. Through his connection with the sales department, he also traveled all sections of the country in his company's interests and probably enjoys a wider acquaintance throughout the telephone field than almost any other young man in that line of work to-day.

Geo. W. Conover has been a prominent factor in telephone circles for almost twenty-five years, having been in charge of the Chicago Telephone Company's office at Valparaiso, Ind., in 1881 and thereafter.

When the Independents first began to make themselves a

H. S. Durant.

prominent part of the telephone business, Mr. Conover cast his lot with them, and for the past eight years has been widely known as a purchasing and forwarding agent for telephone supplies. His office has been in the Merchants' Loan & Trust Building at 135 Adams street, Chicago, where the new firm will continue to make its headquarters.

While they do not propose to represent nor handle any telephones or switchboards, Geo. W. Conover & Co. will aim to supply almost every other accessory essential for the equipment of a complete telephone system. Among their specialties are: Construction material, poles, cross arms, braces, pins, brackets, insulators, wires, strand, cables compound, hangers, paper sleeves, wire joints, anchors, terminal heads, tools, carriage bolts, machine bolts, lag screws, washers, guy clamps, pole steps, lightning arresters, fuse blocks, fuses, dry batteries, etc.

It will be remembered that Geo. W. Conover & Co. furnished complete, exclusive of telephones and switchboards, all of the materials for the elaborate new plants at Lincoln and Sioux City. They announce that they are able to fill orders for electrical material of all kinds promptly and at prices that are attractive to the very closest buyers.

A STERLING VICTORY.

The United States Circuit Court of Appeals has handed down the decision in the suit of the Western Electric Company vs. The Galesburg Union Telephone Company, which suit involves the common battery multiple circuits known as the Fowler system, which is manufactured by the Sterling Electric Company of Lafayette, Indiana; the Sterling Elec-

tric Company having defended these suits. The case has been fought very bitterly for the past three years, the first hearing being before Judge Siemans of Milwaukee in the United States Circuit Court at Chicago, his decision being in favor of the Galesburg Union Telephone Company, or the Sterling Electric Company. The case was appealed to the United States Circuit Court of Appeals, where it was again bitterly fought, the Court handing down the decision January 26th, affirming Judge Sieman's opinion.

This is the last Court of resort, and the Sterling Electric Company is to be congratulated on its signal victory. The company says that "so far as its common battery multiple system is concerned, it is the only manufacturer in the Independent telephone field whose patents have been adjudicated and affirmed and in position to furnish users with a system that is free from any possible patent litigation."

AMERICAN ELECTRIC FUSE COMPANY NOTES.

One of the most interesting exhibits at the Coliseum Electrical Show was the display of new type American protectors for pole top use. These protectors include a number of types for simple cable distribution, also types with line fuses and with carbon lightning arresters. The protectors are made in a variety of designs, some being mounted upon wood and others upon iron bases. For covering either a galvanized iron cap or can is used or, if preferred, a regular pole top box of the well-known American design.

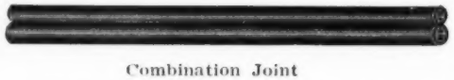
These latest American protectors show finished workmanship and careful attention to detail; and have, the company states, met with the unqualified approval of engineers who have tested them. The Fuse company will shortly issue a

Split Joint.

new catalogue showing these specialties and it is reported that orders were taken during the Coliseum Show for over 5,000 lines of these protectors simply from the samples there shown.

The company is also preparing to put out a number of other specialties for the spring trade.

The company has organized a stock department in its new factory at Muskegon, Mich., for the purpose of carrying a three months' supply of all its standard American specialties. Its stock room is 210 feet long by 50 feet in width and occupies the entire third floor of one of the company's buildings. This stock room is divided into departments and sections, and the company is now working over time in order to get all of these various stock rooms completely filled in time for the regular spring business. During the year



Combination Joint

of 1906 any order, no matter what the size, nor for what class of goods, will be shipped immediately from stock if the goods are standard and listed in the company's catalogue. In order to do this the company states it has made an investment in its stock of approximately $100,000.00, and as prompt delivery is one of the most important elements of business success, there is no question that the investment will pay. The company will issue stock sheets monthly to its principal customers showing them what stock is on hand so that customers may be guided in their purchases accordingly, and not have to carry an excess stock themselves in order to provide for emergencies.

The company reports very large sales on its special combination and split connectors, an illustration of which appears herewith. These special connectors are designed to be used for the joining of different sizes of wire and for the making up of the ordinary drop wire connections. The company also makes connectors for all standard sizes of copper and iron wire in both full and half length sizes.

The use of a connector makes it unnecessary to make a soldered joint in joining iron wire together and makes a joint very much superior to any other kind of a joint made. For copper wire special annealed copper connectors perfectly brazed are used. For iron wire tinned soft steel connectors are furnished, or tinned copper connectors.

Prices are lower than ever before, notwithstanding the high price of metals. The company would be pleased to send samples and quote prices on application to its factory at Muskegon, Mich.

THE CHURCHILL CABINET COMPANY.

We are sure that so interesting an industry as telephone cabinet-making must appeal very strongly to our readers.

Ole Gullicksen.

The plant, of which TELEPHONY presents a number of excellent views herewith, is devoted entirely to this work. Its owners give telephone cabinets their exclusive attention; their factory, machinery, equipment and employes are selected throughout with the sole object in view of turning out the finest telephone cabinets which can be produced, and at a minimum cost.

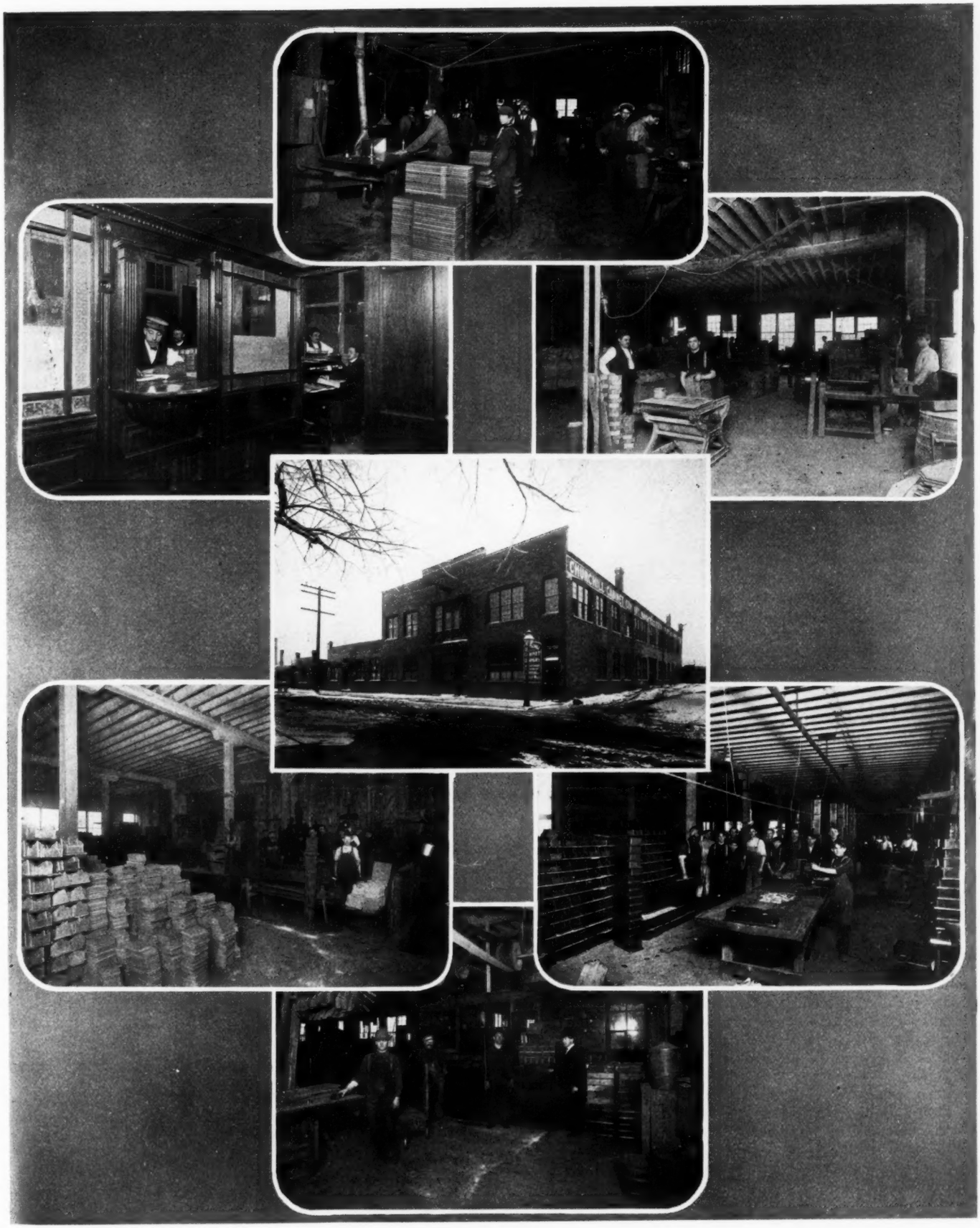
Some idea of the success which this firm has attained, as well as a very impressive opinion of the telephone industry at large, may be gained from the fact that over three carloads of telephone cabinets are shipped from this factory every week. The Churchill Cabinet Company is said to be the largest and most thoroughly equipped factory in the world, devoted exclusively to the manufacture of telephone cabinets. Its plant is located at 72-76 Churchill street, Chicago, having all the advantages of railroad spurs, good light and an always available supply of skilled employes.

Tracks, running to the factory's doors, deposit coal, lumber and other requisite materials, which are bought in large quantities at the lowest possible price. Specially built machinery enables its operatives to produce a maximum number of the crude cabinets daily, expert joiners and finishers giving the crude cabinets a finished appearance. All the sawdust, debris and remnants of the shops are removed by a suction system to the boiler room where they are converted into heat and power. From such details as the above, one may readily surmise why it is that the Churchill Cabinet Company enjoys so prosperous a volume of trade in the telephone field even were nothing said or known concerning the individuality of the firm. To the latter item, however, full credit is due for the success which the Churchill Cabinet Company has attained.

Experienced men, equipped by years of special training in the cabinet-making art, are owners and operators of the plant. Furthermore, they enjoy a wide and favorable acquaintance throughout the telephone field. They cater chiefly to the carload trade and are handling satisfactorily the business of several of the large telephone factories.

As to honesty and square dealing it is said no firm stands higher. They have passed the experimental stage and are on a firm business basis, have a thorough organization and practical experience. Their invoice, January 1st, disclosed that a neat profit was made in 1905 and by increasing their output from 100,000 boxes to 150,000 boxes, it is expected that an even handsomer showing will be made the coming year. So well and so favorably known are the Churchill Cabinet Company and the quality of their goods that four proposals have been made them within the past few weeks to remove to other cities, all of which were declined.

Few men in the manufacturing end of the telephone field



Churchill Cabinet Company's Factory in Center and Interior Views.

are better known than Mr. Ole Gullicksen, president and treasurer of the company. Mr. Gullicksen is an admirer of the Rooseveltian anti-race suicide theory, having seven interesting children. Even with such strong attractions as these at home, Mr. Gullicksen found time to make six trips around the telephone manufacturing field last year, posting himself thoroughly in regard to conditions and keeping closely in touch with the business, its needs and prospects.

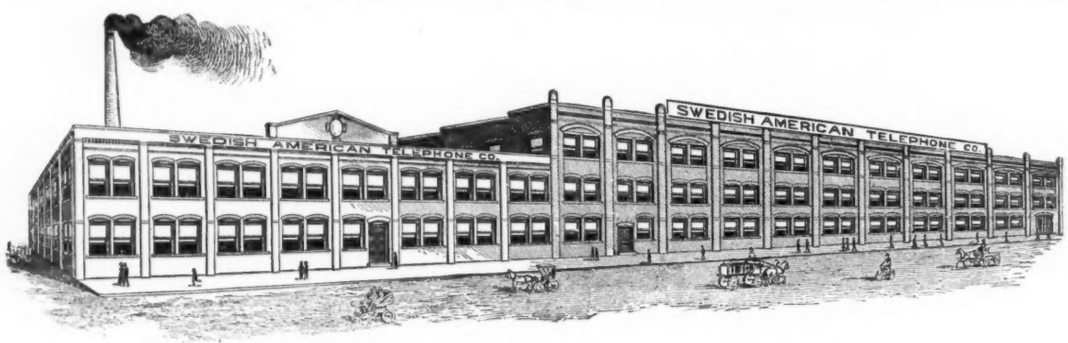
His associate is Mr. John Petersen, secretary and superintendent—a substantial business man who, like his partner, knows every detail of the business. Together, they make an exceptionally strong team and the success of the company is assuredly deserved. Messrs. Gullicksen and Petersen attend nearly all the telephone conventions and already they are arranging for an elaborate exhibit at the next meeting of the National Interstate Telephone Association. They also are at work just now on a new style of cabinet which is calculated to make a big hit with the manufacturers when brought out in the near future.

SWEDISH-AMERICAN ELECTRICAL SHOW EXHIBIT.

The Swedish-American Telephone Company was among the leading telephone exhibitors at the recent Electrical Show held in Chicago. Its exhibit consisted of the company's well-known type of series, exchange and bridging telephones, as well as a complete line of central office equipment. The exhibit was located near the center of the building and the originality of the display attracted much attention. The space was artistically decorated in green and red and illuminated by a row of 150 opalescent incandescent electric lights that were arranged around the top of decorated partitions. This illumination, together with the company's name on a large electric sign sixteen feet in length and twelve feet high containing two hundred lights, produced a striking effect. The many telephones shown made up in mahogany and gold, white and gold, bird's-eye maple and other unique and original models put a stamp of individuality on the display not found in other telephone exhibits. That part of the space facing the aisles were placed glass cases which were filled with telephone and switchboard parts, arranged in a manner that attracted the attention of the passerby. The Swedish-American Telephone Company has recently moved into its new factory building and in keeping with its original and unique method of advertising, exhibited a facsimile of its new plant. It was made up of papier-mache and illuminated, giving the effect of being in actual operation. The company reports that it has closed several good-sized contracts during the show. Telephone days January 21, 22 and 23 being especially productive of orders. There is no question as to the good results this show has produced and will continue to produce for Independent telephony in general. Out of the many thousand visitors there were a goodly number that had no conception of the magnitude of this enterprise. In other words it was an educator that will have far-reaching benefits, and will in a great measure stimulate and command respect and interest in Independent telephony among those who heretofore have only known one side of the story.

The Swedish-American Telephone Company has taken an active interest in the electric show from its inception, and the business judgment in so doing has been found to be correct from results obtained. The exhibit was in charge of courteous salesmen and judging from the crowds, business was good, and without doubt more telephone men were in attendance during the telephone days than ever attended any other show of this kind. The show closed Saturday night January 27 amid a blaze of glory, and on account of the grand success everyone was in a jubilant mood. The next annual show will doubtless be even a greater success than the one just closed, and the Swedish-American Company will be found there with a bigger and better display than ever, although it will require considerable time, expense and effort to eclipse their display at the show just closed.

Telephone men who failed to visit the show are invited by the above named company to visit its new plant, which has 200,000 feet of floor space that is devoted to the exclusive manufacture of telephone apparatus. Same can be readily reached by Chicago & Northwestern local trains to Summerdale, a ride of about fifteen minutes. The above company has beyond doubt one of the most complete and thoroughly organized manufacturing plants of this character in the United States and telephone men visiting Chicago will add to their fund of knowledge by paying it a visit.



New Factory Building Swedish-American Telephone Company, Chicago.

TELEPHONE CONTRACTOR.

Many readers of TELEPHONY are well acquainted with D. Baumflek, whose likeness is presented herewith. Mr. Baumflek is one of the most progressive of the younger set of telephone engineers and contractors. His telephone career began ten years ago at the Western Electric Company. Starting in the switchboard department, he worked in every department of interest to a practical telephone man.

D. Baumflek.

After leaving the service of the Western Electric Company, he entered the service of the Western Union Telegraph Company in Wisconsin, and after operating there for a year, he went into the construction department. Later he left that company to pursue telephone work, and from then up to the present he has devoted his time to telephone, electric light and street railway construction work, five-eighths of his time being devoted entirely to telephone work. He makes a specialty of line construction work, and has been very successful in that direction. Mr. Baumflek is senior member of the firm of D. Baumflek & Co., 3737 Vincennes avenue, Chicago.

TRADE NOTES.

MORGAN BROOKS, professor of electrical engineering of The University of Illinois, is engaged in fitting out a new telephone laboratory.

THE GENERAL OFFICES of the Safety Insulated Wire & Cable Co. have been removed from New York City to West First street, Bayonne, N. J.

THE KRAG IMPERIAL CABINET CO., makers of steel filing cabinets and lockers for telephone companies, are removing to larger and better quarters at Fulton & Leavitt streets, Chicago.

THE ILLINOIS ELECTRIC COMPANY, 239-241 Madison street, Chicago, has issued a new net price list and discount sheet applying to its No. 17 catalogue of high grade telephone construction material and specialties.

QUEEN & COMPANY, makers of electrical measuring instruments such as portable test sets for telephone companies, have removed to Eighth and Arch streets, Philadelphia, Pa., where they will have greatly increased facilities.

THE EWING-MERKLE ELECTRIC COMPANY, St. Louis, Mo,. is mailing a calendar card for January, 1906, upon the back of which is some descriptive matter calling attention to several lines of apparatus which the company is carrying.

LYON METALLIC MANUFACTURING COMPANY, 14-20 Ann street, Chicago, has issued a mailing card calling attention to its line of steel racks, etc. Telephone companies are requested to write for descriptive matter and prices on lockers.

THE NEW CATALOGUE of the International Electric Meter Company of 330 West Randolph street, Chicago, has just been distributed, and it illustrates and describes comprehensively, and in concise terms, the leading facts concerning International meters.

THE INDIANA RUBBER & INSULATED WIRE CO., of Jonesboro, Ind., is sending to the trade a very attractive calendar showing a view of the company's factory and calling attention to its product. The calendar is worth preserving and will be mailed free upon request.

THE MOON MANUFACTURING COMPANY reports its orders for export shipment are rapidly increasing, having recently received an order for terminal apparatus to be shipped to Alexandria, Egypt. The company also reports shipments within the last few months to Lima, Peru; Bombay, India, and London, England.

THE COMMERCIAL ELECTRICAL SUPPLY CO. of St. Louis, Mo., publishes a semi-monthly stock sheet and price list on wires and cables carried in St. Louis stock. The company would be glad to put any exchange managers name on its mailing list for these price lists, as well as for its complete line of printed matter.

THE RECENT EQUIPMENT by the American Electric Fuse Company of the Keystone Telephone Company exchange of Philadelphia with American self-soldering protectors has previously been noted in these columns. The Philadelphia exchange being one of the largest Independent exchanges in the world, gives excellent opportunity for determining the value of American Protectors in actual service. The American protectors at Philadelphia have been in use for a number of months and, it is said, are giving such perfect satisfaction that an additional equipment was ordered during January for a branch exchange.

THE NATIONAL CARBON CO., of Cleveland, Ohio, has issued one of the feature calendars of the year. It is a photographic study prepared by the Photo Company of America, and is as pretty as the one issued by the company last year. The calendar contains a moonlight schedule for 1906 and will be sent to anyone postpaid.

THE PORTER CEDAR COMPANY of Saginaw, Mich., of which J. S. Porter is president and H. C. Hyde secretary and treasurer, says that it has done a larger business in 1905 than at any time in its history. This company is a big producer of cedar poles and ties, and supplies a large number of consumers, particularly in the central and western states.

B. C. HALDEMAN, western electrical manager of the De-Forest Wireless Telegraph Co., sent the following telegram to Mr. W. B. Roberts of the Rock Island Battery Co.'s exhibit at the Coliseum in Chicago, January 17: "The Rock Island Dry Battery is the best I ever used." This was the first wireless message passed between Kansas City and the Coliseum.

THE FISK-NEWHALL TELEPHONE MANUFACTURING COMPANY, Chicago, have issued a new catalogue, descriptive of their telephones, switchboards, drops, generators, generator winders, coil winders, tubular glass fuses, telephone locks, and other telephone accessories. This catalogue they desire to have in the hand of every buyer of telephone supplies. A card will bring it.

A. B. CONOVER has been elected treasurer and general manager of the John A. Roebling's Sons Company to fill the vacancy caused by the death of Mr. George C. Bailey. Mr. Conover has been connected with the Chicago office of the company for the past 18 years. About a year ago he was appointed general agent during Mr. Bailey's absence on account of sickness.

THE SOUTHERN ELECTRICIAN is the name of a new electrical journal published at Greensboro, N. C. The first number is attractive and interesting, and as it will be devoted to the electrical industry in the South, it should prove of value to Southern readers and advertisers and profitable to its publisher. TELEPHONY extends its best wishes for the success of the Southern Electrician.

THE UNITED EXCHANGE COMPANY of Traer, Ia., believes in advertising its up-to-date telephone service, and does so very effectively in a striking folder, printed in two colors, which was recently mailed out to the residents of that city and community. The United Exchange Company recently installed a large new switchboard manufactured by the Chicago Telephone Supply Co. of Elkhart, Ind.

THE MONTGOMERY COUNTY TELEPHONE COMPANY of Red Oak, Iowa, is installing the Baird secret-service system on its rural lines, which is one more indication of the up-to-date management of the Red Oak company. If the same increase in rural subscriptions follows as has been noted elsewhere on the installation of the Baird system the

company is quite likely to issue a much larger directory soon.

THE STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, Rochester, N. Y., and Chicago, Ill., is distributing bulletin No. 14, descriptive and illustrative of private branch telephone exchanges. This bulletin is very handsomely printed, and, in addition to the descriptive matter and illustrations pertaining to the details, there are included a number of views of complete switchboards and switchboard outfits.

THE AMERICAN ELECTRIC SUPPLY CO., Chicago, has issued a very complete and convenient new, general catalogue for 1906. It will be mailed, prepaid, to all companies and individuals, interested in the purchase of telephone and electrical supplies. The new catalogue contains 630 pages, well filled with good, live matter and illustrations, making it one of the very best catalogues before the trade to-day. You are invited to send for one to-day.

HALLETT IRON WORKS of 96 W. Polk street, Chicago, is calling special attention to its attachment irons for supporting service or drop wires. The Hallett company makes a two-point bracket, calls it a Universal Iron, which can be fastened on a cross arm, the side of a pole or a building—one shape does the whole thing. The Hallett people want to write personally to anyone interested in good drop work to present the merits of Hallet specialties.

BELDEN MANUFACTURING COMPANY, Chicago, has just issued a new catalogue illustrating and describing the company's complete line of electrical wires and cords. The catalogue gives tables of weights and lengths and will be found an invaluable guide to buyers. The Belden company manufactures copper and German silver magnet wire; switchboard and jumper wire; flexible telephone and electrical cords; self-fluxing solders; bare and tinned copper wires; bare German silver wire; electro-magnet winding; braided sleeving; electro-magnet winding machines; revolution registers. The catalogue will be sent to anyone upon request.

FRANK B. COOK, Chicago, reports orders during October, November and December, 1905, for his various types of apparatus from companies all over the United States as follows: Distributing frame and protectors, 14,690 pairs; S W terminals, 306; junction boxes, 253; T5 terminals, 397; T4 terminals, 20; T A terminals, 62; T M terminals, 20; S M terminals, 46; T6 terminals, 76; 12A protectors, 3,250; Type H strips, 10,675; Type M, 75; M2 terminals, 16; N terminals, 50; J terminals, 23. Mr. Cook has received from the Stromberg-Carlson Telephone Manufacturing Co., Automatic Electric Company and other manufacturers many orders for his line of apparatus.

MR. J. D. KEARNEY, for some years past one of the leading factors in the Central Electric Co., is now manager of the Zenco Electrical Supply Co., Chicago. Mr. Kearney's wide acquaintance and experience ably qualify him for this important place. While the Zenco Electrical Supply Co. was but recently organized, it is thoroughly financed, carries a very extensive new stock and is located on one of the best known electrical trade corners in Chicago—the corner of Van Buren and Jefferson streets. Mr. Kearney informs TELEPHONY that he expects to cater carefully to the better class of telephone trade and he hopes to hear from those whose needs may lie in that direction.

VINTON A. SEARS, of Boston, Mass., who some months ago resigned from the various automatic telephone companies in Massachusetts, has moved to the Sears Building, Boston, where he will continue to be interested in Independent telephone work and securities. He will, however, be independent of any particular system of telephony. Mr. Sears organized the automatic telephone companies at New Bedford and Fall River, Massachusetts, which were the first in the world to demonstrate the feasibility and practicability of the automatic or "girlless" system. Mr. Sears is the author of that well-known book, "Telephone Development, Scope and Effect of Competition," the second edition of which required 5,000 copies for this country and Europe.

THE BAIRD MFG. COMPANY, Chicago, has issued a new booklet, No. 101, advertising its telephone specialties and supplies—particularly its secret service, or selective lock-out, telephone system. The Baird Mfg. Co. has done an extensive business with this device and reports that it is giving general satisfaction. To quote from the booklet, "It has proven a rental rate raiser in seventeen states and has been adopted by a rapidly increasing list of enterprising companies who are not afraid to learn. With this system nineteen parties can be carried on one line and each as private as an individual circuit. It is for full metallic magneto circuits only. Write for the booklet. It gives full particulars.

THE AUTOMATIC ELECTRIC COMPANY, Chicago, is distributing at the Electrical Show a new booklet. The cover is of Japanese vellum, on which is reproduced in the original tints the grand prize diploma which was awarded to the Automatic Electric Company at the St. Louis World's Fair, 1904, they being the only Independent telephone manufacturers to be so honored. The booklet contains a brief description of the working system, with pictures and data regarding larger exchanges built by the company and a complete list of the public and private exchanges which the company has built since its organization. In addition there is an article on telephone competition and its benefits to the public, which is a clear and convincing argument for the Independents.

THE AUTOMATIC ELECTRIC COMPANY of Chicago is well pleased with its year's work, as the list of exchanges, which it has equipped in the last 12 months is a long one. Twenty-one public exchanges were installed aggregating about 25,000 lines. The largest of these was the Citizens' Telephone Company's exchange at Columbus, Ohio, with 8,000 lines, West Exchange of the Home Telephone Company of Los Angeles, Cal., coming second with 4,000 lines. Private exchanges aggregating 413 lines were installed during the year, the largest being for the Brooklyn Heights Railway Company. Additions to 15 public exchanges and six private exchanges were made. At the beginning of the year the company had on hand contracts for nine public exchanges aggregating 19,800 lines, and for three private exchanges, some of which have already been partially built.

THE STANDARD UNDERGROUND CABLE COMPANY has leased the exclusive use of an all-copper line to connect its general office and factories at Pittsburgh, branch offices at New York and Philadelphia and its eastern factories at Perth Amboy. This private line will be available for either telegraph or telephone service. There could be no better evidence of the large aggregate volume of business and the growing condition of this important manufacturing company; for so far as known this will be the longest exclusive wire owned or operated by any company confining itself to the manufacture of copper wire and cables. The service will be in effect January 1, 1906, and while without doubt of great convenience and value to the company in facilitating communication between its offices and factories and the important market centers of New York, Philadelphia, and Pittsburg, it is installed primarily to enable it to place itself in closer touch with its customers and to give

these customers the same quick service that would be possible if its general offices were located in each of these cities instead of in one.

MOST READERS and workers in the telephone field are already fairly familiar with the Blake Insulated Staples, made by the Blake Signal & Mfg. Co. of 246 Summer street, Boston, Mass. Those who have not yet had an opportunity of investigating same will be interested in the following letter, which was recently sent the manufacturers by Arthur B. Smith, professor in telephone engineering at Purdue University:

"I wish to thank you for the sample cleats sent us. From my inspection of them they seem to be what I often longed for when directing work in the field. For many places these are superior to your very excellent saddle staples, as where it is necessary to run the wires on lath and plaster walls. They are superior to the staple in that they may be removed subsequently without damaging the insulation. I wish to congratulate you on your success in producing such good staples and cleats."

THE LINE FUSE as a protector is continuing to grow in favor and the old well-known American line fuse, manufactured by the American Electric Fuse Company, is sold more largely every year. This fuse is made with a specially treated wooden tube enclosing a fuse wire, the tube being thoroughly saturated with a moisture proof composition which prevents swelling. The terminals are of heavy brass and are tinned where the fuse is to be used with iron wire. The fuse is made in any desired ampere capacity, the ordinary sizes being one, two and three amperes. A fuse of similar type, but slightly different in design, is furnished for use inside the office and on cable terminals.

All American fuses are guaranteed as to rating and carrying capacity and the company states are universally satisfactory as protectors. They are in use by some of the largest Independent and Bell companies in the United States and the "repeat" orders constantly received show they give perfect satisfaction.

THE INDIANA STEEL & WIRE COMPANY of Muncie, Ind., make a strong specialty of wire for telephone purposes. They are pioneers in this field and enjoy an extensive trade, embracing a large proportion of the operating Independent telephone companies of the country. Recently, they have issued a folder concerning telephone wire from which the following extracts are taken:

"As the greatest element of cost in constructing a telephone line is the labor, it behooves the purchaser to take every precaution against inferior wire. * * * Twenty-five cents expended for a bottle of saturated solution of sulphate of copper for testing galvanizing may save you several hundred dollars and improve the service of your lines henceforth. Any druggist can prepare this solution. * * * It has been thoroughly, practically and satisfactorily demonstrated by chemical analysis, scientific tests, and by the satisfaction of our customers that our telephone and telegraph wires is of the highest quality and gives entire satisfaction."

THE GENERAL ELECTRIC COMPANY, in view of the great importance and utility of the United Engineering Building, as a home and center for the engineering professions and arts, has made a contribution of $25,000 to the land and building fund of the American Institute of Electrical Engineers. President C. A. Coffin, who takes a warm personal interest in the matter, has also sent his own check for $5,000. The committee, which had already received gifts and pledges amounting to nearly $70,000, is greatly encouraged by this generous support of its work. The fund is now with other new subscriptions well over $100,000, and with renewed energy the committee has begun its canvas of the field with the object of securing the second necessary $100,000. About 600 members have already subscribed to the fund, and the committee expects to have no difficulty in at least doubling this number. It has just issued to the whole membership a handsome pamphlet, illustrating and describing the new building in course of erection in New York City, and detailing the steps that have been taken by the associated engineering bodies to give effect to Mr. Carnegie's original gift.

The Fisk-Newhall Telephone Manufacturing Company, Chicago, describes a Newhall protective device, which the company states it will furnish to the telephone exchange manager "cheaper than the cheapest, and better than the best"; a device that has stood the test of time, and proven its capability to take care of "sneak currents," better, the company claims, than any other that has ever been placed upon the market. This refers to the little quarter-ampere, or half-ampere fuse that has been made up in the form of mica or glass fuses. The new device of the Fisk-Newhall company is a glass tubular fuse, having the copper tip at each end, permanently glazed to the tube by heat, so that they cannot come off unless the glass be broken.

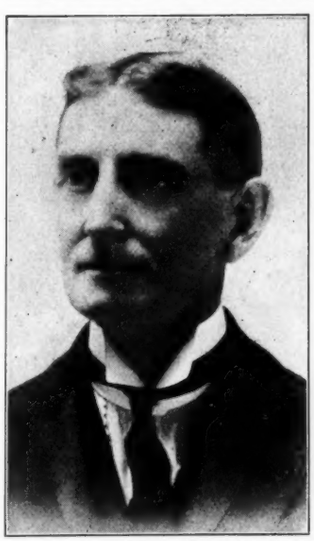
The company has provided small mailing cases for samples of these fuses, and will gladly mail one to any reader of TELEPHONY that he may see the device exactly as it is.

By improved mechanical devices, the company claims it is enabled to sell this fuse at the price asked for the cheapest kind of mica fuse, and, considering the claim that this fuse is better than the best yet placed upon the market, it is an offer that will be taken advantage of by telephone buyers.

An illustration of this fuse is given in the company's advertisement on another page of this issue.

JAMES F. BARNETT.

The Missouri Independent Telephone Association is to be congratulated on securing the services of so valuable a traveling secretary as James F. Barnett, the subject of this sketch.



James F. Barnett.

Mr. Barnett was born on a farm in Scotland county, Mo., where his parents moved from Kentucky. He is thirty-seven years of age, and he learned the art of telegraphy at the age of fifteen and was appointed to a station on the Wabash railroad. Finding that he did not care for the work, he resigned and went to St. Louis, where he secured employment with Christian Piper, as a solicitor for consignments of leaf tobacco to the St. Louis market. Before he was nineteen years of age, Mr. Barnett worked up a large tobacco business for the St. Louis market from Ohio, Indiana, Kentucky and other states.

Shortly after the market was established he resigned his position with Mr. Piper to accept another as retail man with B. Nugent & Bro., the dry goods merchants of St. Louis. Two years later he associated himself for three years with the I. Meek Estate, at Bonaparte, Iowa, as specialty salesman, covering five states. Following this he became interested in buying and selling new inventions. In this and the novelty line he covered nearly the whole of the United States and Canada. He is now interested in several novelty manufacturing plants, through one of which he be-

came in touch with the telephone business and later became active.

Mr. Barnett's work as organizer and secretary for the Missouri association is characteristic of him. Through his untiring energy and his ability to win and hold friends, he has been very successful, so much so that his state now stands in the front rank of well organized Independent telephone states.

PORTABLE GALVANOMETER.

The Leeds & Northrup Company of Philadelphia have been granted letters of patent covering a portable moving coil galvanometer with novel features herewith described and illustrated. The distinguishing feature in the method of suspending and winding the moving system.

The suspension consists of upper and lower filaments and in this particular, it differs from the pivot and jewel as ordinarily used in instruments of the portable type. These filaments are fully protected against breakage in a manner to be described later. This arrangement of the filament suspension permits high sensibility and avoids the initial friction to be overcome when jewel bearings are adopted as a

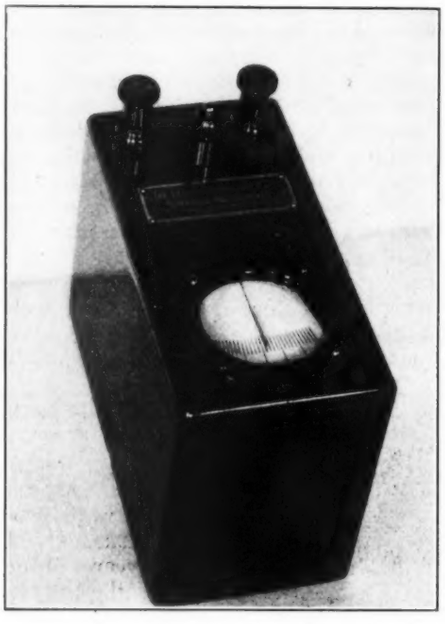


Figure 1.

means of suspension. This is of importance, especially when the galvanometer is used for zero methods and by reason of this fact it can be substituted for instruments of the mirror type in potentiometer work for accuracies of one fifth per cent and in all Wheatstone and slide wire bridge measurements to commercial accuracies. Its high sensibility makes it available for use in many cases where it was ordinarily supposed that it is necessary to use a non-portable suspended coil galvanometer. The entire construction of the instrument is one of extreme simplicity and compactness, while at the same time preserving the sensitiveness and general efficiency of other forms which it has hitherto been considered impracticable to make so simple and compact.

The magnetic field is produced by a *U* shaped cast iron permanent magnet, figures 2 and 3, having inwardly directed poles at one end so as to have north polarity only on one side of the air gap, separating the poles, and south polarity only on the other side of the air gap. The magnet is slotted so as to accommodate the moving system as shown. The air gap between the poles being very short, the field is uniform and intense.

The moving system consists of four flat coils of very fine wire wound alternately in opposite directions, so as to produce alternate north and south poles when viewed from one side, as shown in diagram in figure 4.

These coils are held between two aluminum disks, *b*,

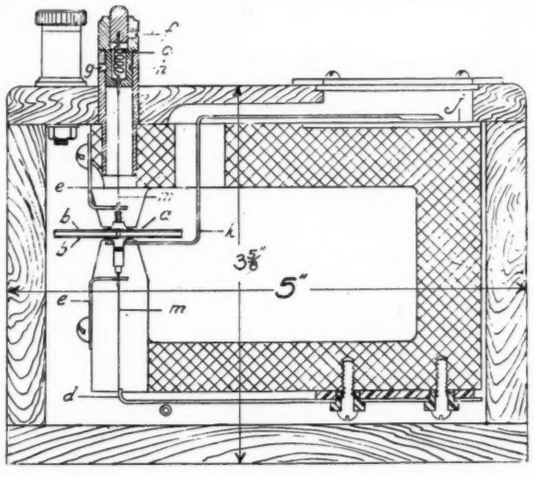


Figure 2.

and suspended in such a manner that normally only a portion of each coil extends into the air gap between the magnet poles, though at all times only about one-half of the coil surface is between the pole faces. It is evident therefore that when current is passed through the coils (see figure 4)

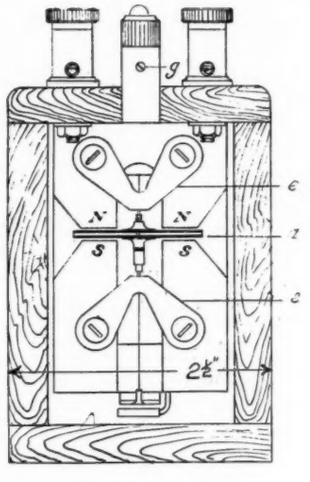


Figure 3.

two of the coils of like polarity will then swing around to inclose the greatest number of lines of force, while the other two coils of like polarity will be repelled. The aluminum disks, *b*, also serve the purpose of damping the system and

Figure 4.

rendering it dead-beat. The galvanometer can be given a high, medium or low resistance by connecting the coils in series, series-parallel or parallel.

The suspensions consist of three wire filaments of a high

tensile strength, which are non-corrosive. To give the entire system resiliency in the event of sudden jars, the upper suspension terminates in a spiral spring, *c*, and the lower suspension is attached to a long flat phosphor bronze spring, *d*, as shown in figure 2. An additional protection against excessive strains on the moving system is provided by means of two guards, *E*, shown in figures 3 and 4. These guards have clearance holes to provide for the rotation of the system around its axis of suspension but to limit the sidewise movement or play of the system, thereby arresting the movement of the coil due to any sudden shock. The movement of the system vertically is limited by the pole-faces of the magnet, which also prevents breaking of the wire filaments.

The torsion head, *f*, provides a delicate zero adjustment and by means of the screw, *g*, operating in an annular groove, *h*, engages the end of the groove and thus acts as a stop to limit the extent to which the torsion head may be turned and therefore prevents the suspension filament from being twisted off by turning the adjusting head too far.

The magnet with its complete moving system and scale is mounted in a highly polished mahogany case as shown in figure 1. A circular opening in the top protected by a glass window provides for the visibility of the scale. The binding posts are securely mounted as indicated and are arranged to clamp large or small wires. The outside dimensions of the case are five inches by two and one-half inches by three and one-half inches high.

STERLING CENTRAL BATTERY EQUIPMENT.

The Sterling Electric, Lafayette, Ind., makes the claim to having the most economical and efficient central battery equipment on the market and to substantiate this claim the following data taken from the advance sheets of its new catalogue, may be of interest:

One of the leading features of the Sterling common battery system is its low consumption of battery power in the operation of line and supervisory circuits. In ours, as in all systems, more current is taken by the supervisory lamps and relays than by the transmitters. Small consumption of battery power, however, does not mean that we deprive the talking circuit of its proper proportion of current, but that our supervisory system takes less.

In the data given below, the ringing machines are not taken into consideration, as these vary, from a pole changing battery machine to a shunt wound generator, so that no reasonably accurate data can be given without exact data as to the size the plant and operating conditions. As a rule, however, small exchanges—1,000 or less—require a greater proportion of battery to operate the ringing generators than the line circuits.

The following estimate of battery consumption in the talking and supervisory circuits is based upon actual working conditions of a large number of exchanges.

Battery consumption, 264 watt-hours for each 1,000 calls (equal to 3,000 working minutes or three days, two hours).

Allowing each line ten calls per day, this means about a third of one horse-power-hour for serving 300 subscribers one entire day; or, to put it in another way, the power consumption involved in serving 300 subscribers for twenty-four hours is about equal to the power consumed by one 16 candlepower incandescent lamp burning five hours. Each conversation of three minutes, including supervisory current, takes approximately 0.264 of a watt-hour, equivalent to one incandescent lamp burning eighteen seconds. At this rate, twelve hundred lines, working twenty-four hours, would consume less power than one incandescent lamp burning for the same length of time.

In battery capacity (22 to 24 volts), it represents but little over 3.6 ampere hours (or 88 watt-hours) per 100 subscribers, less than half the power of consumption of any other system.

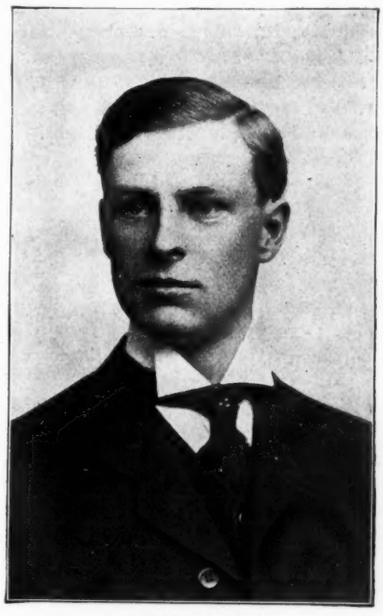
A NOVEL EXPERIMENT.

Theo. Thorward, president of the Home Telephone Co., South Bend, Ind., was a visitor at the Chicago Electrical Exposition. He reports that his company has tried the experiment of employing 500 Automatic Electric telephones in connection with a 2,400-line manual system and that the two systems are interworking in very satisfactory style, enabling them at the same time to increase their subscribers' list and raise their rental rates. This is said to be the first experiment of the kind on record and Mr. Thorward is delighted with its success.

R. E. MACDUFF, JR.

Frank B. Cook has recently added to his constantly increasing sales force Mr. R. E. Macduff, Jr., who is covering Indiana and Ohio. Mr. Macduff is a comparatively new man in the telephone field, but has already made a number of new friends for Cook, and hopes to make many more, both for himself and his house in the near future.

He is unusually enthusiastic about the Cook protective



R. E. Macduff, Jr.

apparatus, which includes switchboard protectors, pole cable terminals, guy clamps, and other well-known Cook devices.

R. S. MITTEN.

R. S. Mitten, formerly sales manager of the Eureka Electric Company, has taken a positoin with the Electric Appliance Company, Chicago, in the telephone department as assistant to S. A. Dinsmore, manager of the company's telephone department. Mr. Mitten will have charge of the correspondence of this department and his acquisition by the Electric Appliance Company will enable it to better take care of its steadily increasing telephone business.

SCHWARZE BELL—TWO-PARTY SELECTIVE SERVICE.

The Schwarze Electric Co. of Adrian, Mich., has recently brought out a very interesting and meritorious device of general interest to telephone men. The device referred to is the new Schwarze Universal Bell, which already is in successful use by a number of leading telephone companies. The special feature of the bell is that it enables telephone companies to readily convert two-party lines into distinct and separate lines at a trivial expense, thereby effecting a big saving. All the change that it is necessary to make in the regular apparatus is to install another key or a push button on the switchboard alongside of, or in proximity to, the regular calling key. Operators can then use one line on the alternating current as usual for calling one subscriber, and the push button, with direct current and Schwarze bell, for the second subscriber, each being entirely independent of the other and enjoying perfectly separate and individual service, although but one circuit is employed for the two.

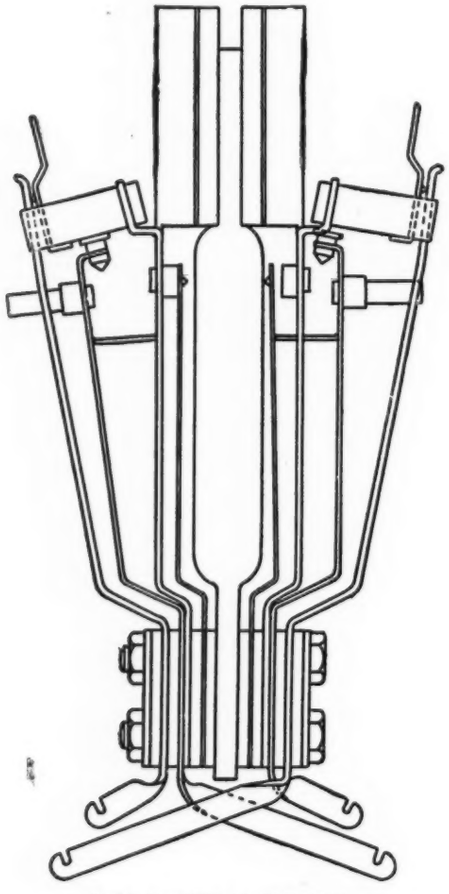
Full particulars regarding this very ingenious and eco-

nomical arrangement can be had by inquiring either of the home office of the Schwarze Electric Co. at Adrian, Mich., or of their Chicago office in the Monon building. TELEPHONY is informed that but four-tenths amperage is required with this service and an ohmage of 30, 35 or 40.

The system is in daily successful use by the Clay Center (Kans.) Telephone Co. This company has some 600 subscribers, of which about 150 are on these special two-party lines.

COOK NUMBER 14 PROTECTOR.

Frank B. Cook, of 242 W. Lake street, Chicago, has received an order from the Stromberg-Carlson Telephone Manufacturing Company for 6,000 pairs of his new Number 14 protector for the new exchange, being installed at Syracuse, New York, and the order for the outside or cable protection has also been placed with Cook. Mr. Cook has



Cook Number 14 Protector.

made some changes in his old Number 44 protector, which have materially improved it. These changes are so radical that it has been given a new type number—Number 14. In this new type of protector, Cook uses the crossed terminals instead of carrying the connections through bolts. This idea is not new, as he used the same scheme in his Number 8 protector, but it has not before been applied to any of the older types.

Another change is in the spring which engages the tip of the coil. This tip is soldered to the coil proper, and when the coil operates the solder is melted, allowing the tip to be pressed away from the coil. The new spring grips this tip tightly, so that it is impossible for the tip to fall down between the springs of the lower banks of protectors.

Instead of mounting the parts of the protector on a solid plate, as heretofore, Cook is now furnishing a formed sheet metal plate, which is very much lighter and fully as strong, if not stronger than the solid plate. The indicator which shows that the coil in a certain bank has operated, is larger and extends out farther, so that the position of the coil which has operated can be seen at a glance by anyone standing in front of the rack. These are four decided improvements, and Mr. Cook believes that the protector will recommend itself to engineers.

TELEPHONES FOR THE DEAF.

The Mears Ear Phone Company of 92 State street, Chicago, has succeeded in developing a type of instrument, called the Aurophone, which is giving excellent results to those hard of hearing.

Aurophone in Use.

The Aurophone is a miniature electric telephone (batteries and all) for the ear. It consists of two parts, a transmitter and an ear-piece, and weighs complete but twelve ounces. The transmitter contains the batteries and fits into the average size vest pocket. The transmitter is of globular carbon and by varying the amount of globulars in the electrode, Aurophones of various tones result. These globular carbons are made in different sizes and the diaphragms of different thicknesses in order to get instruments of different tones to fit the varying degrees of deafness. It is also necessary to make the magnets of various resistance in order to get the proper current for the different tones. The base of the transmitter is hollow, so that the small dry batteries fit into it hiding them completely. The Aurophone differs from the other electrical hearing device on the market which is simply a sound amplifier in being an amplifier of articulation as well; it reflects and transmits sounds on a compensating principle, intensifying the softer sounds and modulating the louder vibrations.

The batteries consist of a single cell and a double cell connected in series. A spring fork connects these three batteries and holds them securely in position. When the two batteries are about exhausted, the third battery can be

Aurophone (Opera Type) Being used at the Opera.

turned and connected by means of the spring fork and thrown into the circuit so that the instrument will be supplied with electricity for at least another week. By this arrangement the batteries cannot be entirely exhausted while the user is at a lecture or at the theater; the Aurophone is always in working order.

The Mears Ear Phone Co. uses only three volts in these batteries which give about eight and one-half amperes on short circuit. The Aurophone when in use consumes one-tenth of an ampere.

The Aurophone is to the sound wave what X-ray is to

light. It combines telephonic with microphonic principles, so that when sound waves strike the transmitter, the quality and timbre of the sound is made far more penetrating. An ordinary sound wave is undulating. The sound wave conducted to the ear by the Aurophone is changed so that it becomes angular and sharp.

These angular sound waves strike sharply against the hearing nerves and force sounds to the brain that would otherwise be unintelligible. This exercise given to the dormant and dying hearing nerves in many cases leads to a perfect restoration of hearing. In all cases of catarrhal deafness regardless of time (providing the Aural nerve is still alive) the patients can hear with the Aurophone and in time many are so improved that they are able to go to church, theater and social gatherings with as much enjoyment as any person.

It has taken many years to perfect the Aurophone. The first demonstration was made in 1902 at the Mt. Airy Schoof for the Deaf, Mt. Airy, Philadelphia, Pa.

It was then very crude, the transmitter, ear-piece and batteries weighing four and one-half pounds. It has gradually been improved and perfected so that now it weighs complete only twelve ounces.

The transmitter is hidden by the vest or waist and the ear-piece is entirely hidden by the hand when in use.

If the hearing nerves are alive, the Aurophone will enable deaf people to hear conversation spoken at any average distance in an ordinary tone, without straining, embarrassment and that look of preoccupation which most deaf people acquire.

Aurophone (Desk Type) Being used at Board of Directors Meeting.

There is another interesting invention at the Mears Ear Phone Company's Chicago office. This is an instrument that is installed in theaters and churches to enable the deaf to hear, the principle is the same as in the Aurophone.

The transmitter of this instrument is two and one-half inches in diameter and is the only part of the instrument in sight. It is connected with a concealed battery and this in turn is wired to certain seats. Detachable ear-pieces are supplied, so that when deaf persons visit the church or theater, they merely insert the plug of the ear-piece into a little receptacle and listen to the sermon or play with as much pleasure as any person with normal hearing in the audience.

One of these instruments has been installed recently in the Harvard Congregational Church, Boston, Mass.

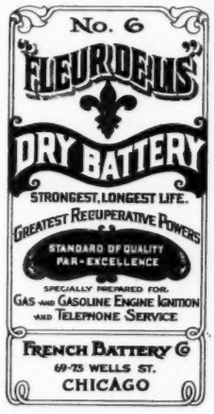
William Thomas Beale, the pastor, in a letter to the company, says: "It has been my pleasure to see the eyes of the deaf fill with grateful tears as they told the joy of hearing the entire service for the first time in years. 'Without it, I could hear nothing; with it, I could hear everything,' is a sample of the expressions deaf persons have made at the close of the service."

The fact that they can hear as well in the rear as in the front of the auditorium still more commends this appliance to those who feel that their attempt to hear ordinarily renders them conspicuous.

By use of the Aurophone, a great many deaf mutes are enabled to hear and understand speech. If they understand the deaf and dumb alphabet, sounds are given them and applied to words so that they quickly acquire a fair vocabulary. Lee L. Cokefair of 6322 Jackson Park avenue, Chicago, is one instance of this kind, he having not heard a sound since he was stricken with fever at the age of three. After using the Aurophone a short while, he not only hears, but is learning to speak and recognize spoken words.

FLEUR DE LIS DRY BATTERY.

In order to avoid any possible confusion, which might be occasioned, and desiring to have their goods stand strictly upon their merits, the new Chicago concern, manufacturing dry batteries under the latest French process, has changed its name from the Columbia Dry Battery Co. to the French Dry Battery Co. This name has been adopted because of the concern's intimate relations with one of the leading French carbon makers and their battery will be styled the "Fleur de Lis," that being the French national flower. Mr. Alfred Landau, manager, informs TELEPHONY that he proposes to make their battery stand for the very highest quality in every respect and will push it vigorously and persistently until it leads the market, as he feels it should. To that end, he states he will not only employ the finest materials, the most approved French process and the most skilled workmen, but will advertise his batteries extensively in the best mediums, making it to the jobber's advantage to carry a full line of the "Fleur de Lis" constantly in stock.



In addition to dry batteries, Mr. Landau will handle globular carbon of the finest quality. He asks that parties interested in such items correspond with him and get his proposition.

THE BLACK-HAWK DRY BATTERY.

One of the new things exhibited at the Chicago Electrical Exposition and one which elicited exceptional interest amongst telephone men, was the Black-Hawk dry battery, recently brought out by the Central Electric Manufacturing Company of Rock Island, Ill. The makers claim that the Black-Hawk battery is perfectly built throughout, being free from any defects in materials or construction and being thoroughly tested before being shipped. Furthermore, the new dry cell is said to possess the highest voltage, greatest amperage, most recuperation and longest life and to show altogether an improvement of from sixty to eighty per cent over any other battery in the market.

Several new and important features are noted in the Black-Hawk batteries, amongst them being the following:

1. A corrugated instead of a smooth zinc tube, which the company claims increases the zinc surface by one-third over that of other batteries.

2. An amalgamating generating matter to protect the zinc.

3. A device for the escape of gases which form in the chemicals and are injurious to the zinc, if allowed to accumulate and remain in a battery.

4. A tubular attachment which allows the batteries to lie dormant when not in use and which makes them operative only when needed. This is due to the active working elements of the batteries being originally in dry, powdered form. Water poured into this through the tube, at once

places the battery in working order. By this means, batteries which stand on shelves, in stores and elsewhere, do not run down, their energies not being called into requisition until the user is ready for them.

The Central Electric Manufacturing Company will be pleased to answer all inquiries regarding their new batteries and is prepared to make attractive quotations on same. The company is strongly financed and is regarded as one of Rock Island's most reliable concerns.

JAMES A. WOTTON.

The telephone and electrical industries of the South owe much to James Ashley Wotton. Mr. Wotton is a Southerner by birth and is by education and inclination further fitted to fill an important place in the commercial and manufacturing advancement of that section.

James A. Wotton.

Born in Charleston, S. C., October 30, 1861, Mr. Wotton attended private schools until he entered the University of Georgia at Athens, Ga., in 1879, graduating with the degree of B. C. S. in 1882. From 1880 to 1883 he held the position of assistant state chemist, from which he resigned in 1883 to accept a position with the Southern Bell Telephone & Telegraph Company, at Atlanta, Ga. The company at that time was just beginning to establish itself in the southern states. With this company he rose by successive steps to be manager of the shops, electrician and chief electrical engineer, remaining with them until 1900. In 1900 he was called to New York as assistant electrician for the American Telephone & Telegraph Company, resigning from this position later to enter the Independent telephone field as a manufacturer. In this latter role he became identified, as chief engineer, with the Wotton Electric & Manufacturing Company, located at Atlanta, Ga., and was engaged in the manufacture and sale of telephone equipments of all descriptions. This company was in the early spring of 1905 merged into the Electric Manufacturing & Equipment Company, formed to manufacture telephone equipments under Mr. Wotton's design and patents, with which company he now holds the position of chief engineer. Mr. Wotton is a full member of the American Institute of Electrical Engineers.

AUTOMATIC EXHIBIT AT THE ELECTRICAL SHOW.

The exhibit of the Automatic Electric Company at the Electrical Show attracted a great deal of attention. The back of the space was walled in by mahogany finished paneled walls seven feet 6 inches high with square posts at the corners. Above the wall were hung two big electrically illuminated signs, those on each side reading "Automatic Electric Company; Telephone Systems," these two being joined by a smaller panel with the familiar dial of the Automatic telephone cut out of wood and outlined by incandescent lamps. This dial is six feet high. These signs were among the most prominent in the building.

Within the booth, which was railed off by heavy green cord and brass posts, was located an automatic switchboard, exhibit size, of the 10,000 type, to which were connected two straight line wall telephones, two straight line desk telephones and four-party line wall telephones. These were operated by the switchboard and a ringing machine was mounted alongside of the board to furnish ringing power. Power for operating the automatic telephone switches was furnished by a storage battery of twenty-six cells.

The telephone department of the Illinois Tunnel Company installed in the booth two automatic desk telephones which were connected with the downtown exchange. The furniture in the booth was all English fumed oak. This exhibit was one of the most popular in the show and was crowded every afternoon and evening with eager spectators listening to the explanation of the system and watching the demonstration.

EDISON TELEPHONE CO.

The name of the Guarantee Telephone Equipment Co., 60-68 W. Van Buren street, Chicago, has been changed to the Edison Telephone Co. The concern will continue to make a specialty of reconstructed telephone apparatus, and will handle both new and second-hand goods of approved makes and in good condition. One of the biggest deals the firm has recently effected was closed in January when they secured a large number of switchboards. As will be noted from our advertising columns, these boards are now being offered at a bargain and are guaranteed to be in good condition. Mr. W. D. Dunsmore is president of the Edison Telephone Co. and Mr. E. M. Snow, manager. Both are deservedly popular telephone men, enjoying a wide acquaintance and years of practical experience in almost every phase of the manufacturing and operating fields.

FIRE VISITS ROCK ISLAND BATTERY CO.

The Rock Island Battery Co. suffered a disastrous fire on the night of Jan. 11, its entire new factory at Cincinnati, Ohio, being completely gutted and all contents, save the books and records, destroyed. Temporary offices at Third and Vine streets were at once secured and negotiations opened for a new factory, which have since been consummated.

This fire came at a most unfortunate time, the company having on hand some very large contracts, but they promptly wired for materials and will suffer but a slight delay and inconvenience. In a letter to TELEPHONY, Mr. M. A. Loeb, general manager, says:

"We wish to state that we will go into business on a larger scale than before, and with the increased facilities which we will have over our old place, we will be in better shape than ever."

VISITORS TO THE ELECTRIC SHOW.

B. F. Wasson, president of the National Telephone & Electric Co. of Clinton, Ill., attended the Chicago Electrical Exposition in January. Other telephone men present included A. B. Diggs, of the Winona Telephone Co., Winamac, Ind.; John H. Bell of the Hoosier Telephone Co., Salem, Ind.; Plym C. Davis of the Cuyahoga Telephone Co., Cleveland; Jno. H. Drawyer of the Empire Telephone Co., Bradford, Ill.; T. E. Hanway of Monticello, Ind.; Jno. A. Campbell of Winamac, Ind.; C. W. Hunt of the Williams Telephone & Supply Co., Cleveland; W. W. Dean of the Dean Electric Co., Elyria, and many others.

INDEPENDENT TALKS.

Boosting the toll business is always an interesting topic to wide-awake managers. Those who want to read some "straight tips, hot from the wire" should write for a little folder entitled "Independent Talks," which recently was issued by the Toll Department of the Inter-Ocean Telephone and Telegraph Company of Buffalo, N. Y. This folder not only is issued in the neatest possible style, but contains some very palatable truths prepared in tabloid form, and we believe the Inter-Ocean company would be very glad to mail a copy to anyone requesting it.

PROGRESS OF THE MONTH

Compiled by H. A. Downey

NEW COMPANIES

NEOLA, Kans.—The Neola Telephone Company has been incorporated.

WAUCOMA, Ia.—The Alpha Telephone Company has been incorporated.

FRANKLINVILLE, N. Y.—The James Telephone Company has been organized.

ALTON, Kans.—The Alton Mutual Telephone Company has been incorporated.

DUTTON, Okla.—The Dutton Telephone Company has been incorporated.

DOUGLASS, Kans.—The Douglass Home Telephone Company has been incorporated.

ALEXANDRIA, Va.—A new telephone company has been incorporated with a capital stock of $50,000.

PERU, Kans.—The Penmar Telephone Company has been incorporated with a capital stock of $5,000.

MENLO, Kans.—The Menlo Telephone Company has been incorporated with a capital stock of $3,000.

PALCO, Kans.—The Palco Telephone Company has been incorporated with a capital stock of $8,000.

WATSON, Mich.—The Watson Telephone Company has been incorporated with a capital stock of $5,000.

BRYAN'S MILL, Tex.—A telephone company has been incorporated at this place with a capital stock of $5,000.

ANTELOPE, Neb.—The Elm Grove Telephone Company has been incorporated with a capital stock of $5,000.

HAYS CITY, Kans.—The Hays City Telephone Company has been incorporated with a capital stock of $25,000.

CHAMBERS, Ky.—The Chambers Telephone Company has been incorporated, with a capital stock of $1,000.

ELKHORN, Ky.—The Elkhorn & Big Sandy Telephone Company has been organized with a capital stock of $20,000.

LAKE BENTON, Minn.—The Lincoln County Telephone Company has been incorporated with a capital stock of $50,000.

KANSAS CITY, Mo.—The Western Independent Telephone Company has been incorporated with a capital stock of $50,000.

NEWBERG, Ore.—The West Newberg Telephone Company has been organized with J. H. Bidgood president and A. Berrell secretary.

CARTHAGE, N. C.—The Carthage Telephone Company has been incorporated with a capital stock of $5,000 by W. C. Petty and others.

HAMMOND, Minn.—The Hammond Telephone Company has recently been incorporated. The company has an established exchange.

PHOENIX, Ariz.—The Huber-Baron Wireless Telephone & Telegraph Company has been chartered. The incorporators are W. J. Barron and T. Hurley.

MORA, Mo.—An Independent telephone company has been organized at this place by John N. Moss, H. H. Snachenberg, H. P. Guthrie and Arthur O'Farrell.

MILWAUKEE, Wis.—The Telephone and Telegraph Company has been incorporated with a capital stock of $25,000 by Samuel E. Hall, E. A. Conway and L. J. Conway.

RITCHEY, Mo.—The Newton County Enterprise Telephone Company has been chartered with a capital stock of $3,500. F. A. Boehning and others are the incorporators.

EL PASO, Ill.—The Grand Telephone Company has been incorporated with a capital stock of $1,100. The incorporators are E. P. Armstrong, J. C. McGraw, C. A. Gull.

COLUMBIA, Neb.—The Dover & Columbia Telephone Company has been incorporated. The incorporators are as follows: A. E. Haughey, J. D. Crabtree, W. C. Ball.

RINGWOOD, Okla.—The Glenwood Rural Telephone Company has been incorporated by E. Frasier, L. A. Johnson and C. H. McDermott to operate a telephone system.

BATH, N. Y.—The Bath-Hammondsport Telephone Company has been incorporated, with a capital stock of $5,000. The incorporators are: Jas. H. Smellie, Wm. Dildine, and others.

HUGO, Colo.—The Lincoln Telephone Company has been organized with a capital of $50,000 for the purpose of establishing a telephone system in Lincoln and adjoining counties.

CERESCO, Mich.—The Marshall Telephone Company has been incorporated with a capital stock of $1,000 for the purpose of constructing a telephone line from Ceresco to Marshall.

NEW YORK, N. Y.—The Telephone Carbon Company has been incorporated with a capital stock of $1,500. The directors are I. T. Madsen, M. J. Lellis and F. Neilson, New York.

NEW YORK, N. Y.—The National Switchboard Company has been incorporated with a capital stock of $50,000. The directors are J. F. McGuire, G. B. Garrison and T. V. Devins, New York.

PROSSER, Nebr.—The Farmers' Mutual Telephone Company has been organized with the following directors: David A. Hare, Robert Lomax, R. L. Wilson, Henry Uden, O. F. Creason.

SEATTLE, Wash.—The Citizens' Telephone Company has been organized at this place for the purpose of supplying telephone service to the town of Columbia and various suburban districts.

LAKEWOOD, Ill.—The Lakewood Mutual Telephone Company has been incorporated with a capital stock of $2,500. The incorporators are Charles H. Duckett, J. E. Bowman, E. A. Waekley.

SCOTTSBURG, Ill.—The Scottsburg Telephone Company has been incorporated with a capital stock of $1,200. The incorporators of the company are O. T. Hoyt, O. M. McElvain, C. R. Paul.

SPRING GROVE, Ill.—The Spring Grove Telephone Company has been incorporated with a capital stock of $10,000. The incorporators are Joseph E. Meredith, Anton Schaefer and Henry C. Sweet.

DONGOLA, Ill.—The Dongola Home Mutual Telephone Company has been incorporated with a capital stock of $2,500. The incorporators are B. F. Crabtree, Thomas H. Baugh, J. F. Karraker.

BEAUFORT, S. C.—The People's Telephone & Telegraph Company has been incorporated with a capital stock of $15,000. The incorporators are R. A. Long, George Holmes and F. W. Scheper.

EASTMAN, Wis.—The Western Crawford County Telephone Company has been incorporated by the following: James Fisher, John F. Maney, F. H. Harvat, James R. Maney, M. Lennehan.

GOLDENDALE, Wash.—The Horse Shoe Bend Telephone Company has been incorporated with a capital stock of $400 by William Kamhoiz, G. W. Mallery, T. B. Brown and T. D. Adams.

FAIRBURY, Ill.—The Fairbury Telephone Company has been incorporated with a capital stock of $20,000. The incorporators are as follows: George C. Monk, Charles E. Monk and E. A. Agard.

WATERLOO, N. Y.—The Junius Telephone Company, Ltd., has been incorporated with a capital stock of $1,000, by W. H. Godfrey, H. C. Lundy and George V. Haight, all of Waterloo, and others.

TURBEVILLE, Va.—The Dan River Telephone Company has been incorporated with a capital stock of $5,000. The incorporators are W. B. Wilkins, president; John A. Owen, secretary, both of Turbeville.

GRANGER, Wash.—A farmers' Independent telephone company has been organized with the following officers: President, W. G. Hubbard; vice-president, Barney Morrison; secretary, Jerome Beard.

ELKHART, Ill.—The Elkhart Independent Telephone Company has been incorporated with a capital stock of $1,250. The incorporators of the company are as follows: G. G. Taylor, A. W. James, J. C. Taylor.

SHARON, N. D.—The Sharon Rural Telephone Company has been incorporated with a capital stock of $5,000. The incorporators are I. K. Bakken, Oscar Barrett, P. T. Duncan, A. M. Skadsdamen. Sharon.

JERSEY CITY, N. J.—The Reliance Telephone and Telegraph Company has been incorporated with a capital stock of $125,000. The incorporators are Arthur Johns, Lanier McKee, and Kenneth W. McLaren.

OAK GROVE, Mo.—A number of farmers in this vicinity have organized the Round Prairie Telephone System for the purpose of installing a telephone line which will connect with Oak Grove and Lone Jack.

CLARIDON, O.—The Claridon Telephone Company has been incorporated with a capital stock of $5,000. The incorporators of the company are A. A. McNish, H. D. Morgret, Eugene L. Wilmot, A. L. Bruce.

PORTSMOUTH, O.—The York-Dickey Telephone Manufacturing Company has been incorporated with a capital stock of $10,000. The incorporators are L. D. York, F. H. Dickey, G. W. Zottman, W. F. Zottman.

LILY, S. D.—Articles of incorporation have been filed for the Lily Local Telephone Company, with a capital of $3,750. The incoporators are: B. P. Kortgard, H. H. Payne, H. E. Patterson, David Regneir.

MONTOUR FALLS, N. Y.—Frank Johnson and George F. Barton are interested in the organization of an Independent Telephone Company at this place to be known as the Montour Telephone & Telegraph Company.

DILLSBORO, Ind.—The Dillsboro Telephone Company has been

incorporated with a capital stock of $5,000. The directors are Fred Lubber, Clarence B. Wilson, E. W. Swarthout, J. W. Fleming and G. W. Ellerbrook.

CORNERVILLE, Ill.—The Saline & Hamilton County Mutual Telephone Company has been incorporated with a capital stock of $1,000. The incorporators are as follows: O. A. Tate, J. L. Harris, W. H. Johnson.

JERSEY CITY, N. J.—The Eastern States Telephone and Telegraph Company has been incorporated with a capital stock of $1,000,000. The incorporators are Henry A. Bingham, Cornelius A. Cole, and Alexander F. Garbe.

MOUNTAIN CITY, Tenn.—The Mountain City Telephone Company has been incorporated with a capital stock of $5,000. The incorporators are J. W. Tipton, R. E. Donnelly, J. M. Lacey, L. F. Miller, J. L. Curtis.

CASSELTON, N. D.—The Casselton Telephone Company has been incorporated with a capital stock of $20,000. The incorporators are C. R. Meredith, M. M. Meredith, Casselton, N. D.; W. C. Macfadden, Fargo, N. D.

JEFFERSON, O.—The Citizens' Telephone Company has been incorporated with a capital stock of $6,000. The incorporators are as follows: S. R. Fitch, E. A. Washburn, E. C. Lampson, Charles W. Crosby and others.

POMEROY, O.—The Meigs County Home Telephone Company has been incorporated with a capital stock of $50,000. The incorporators are as follows: Arthur B. Krotz, C. E. Peoples, George Schwegman, W. E. Stansbury.

BRYAN'S HILL, Tex.—The Atlanta & Naples Telephone Company has been incorporated with a capital stock of $5,000. The incorporators of the company are E. W. King, W. O. Bryan and E. O. Bryan of Bryan's Mill.

CORSICA, S. D.—Articles of incorporation have been filed for the Sioux Falls Rock Telephone Company, with a capital stock of $5,000. The incorporators are Joseph D. Hofer, Anna Hofer, A. A. Wipf and John J. Wipf.

NEW YORK, N. Y.—The Rushford Telephone Company has been incorporated with a capital stock of $6,000. The incorporators of the company are J. T. Belanger, V. H. Calhoun and C. N. Tackaberry, all of Buffalo, N. Y.

UNADILLA, Neb.—Articles of incorporation have been filed for the Unadilla Telephone Company. It is the purpose of the organization to construct a telephone system connecting the farmers in this vicinity with Unadilla.

GOLCONDA, Ill.—An Independent Telephone Company has been organized here with the following officers: President, F. H. Rector; secretary and treasurer, Jas. R. King; directors, F. H. Rector, W. C. Cummins, Oren Threlkeld.

GILBERTSVILLE, N. Y.—An Independent telephone company has been organized at this place with the following officers: President, Alvin R. Converse; vice-president, Marcus Terrill; secretary and treasurer, William Peabody.

SOUTH POINT, O.—The South Point Telephone Company has been incorporated with a capital stock of $1,800. The incorporators of the company are: T. Ferguson, C. H. Brubaker, R. E. Kouns, John A. Ankrim, C. W. Ankrim.

KINSMAN, Ill.—The Kinsman Independent Telephone Company has been incorporated with a capital stock of $2,500. The incorporators of the company are as follows: W. D. Lindsay, Thos. Drinan, E. J. Phelan.

SIOUX FALLS, S. D.—The Sioux Falls Rock Telephone Company has been incorporated with a capital stock of $5,000. The incorporators of the company are J. W. Tipton, R. E. Donnelly, J. M. Lacy, L. F. Miller and J. E. Curtis.

MAURICE, Ia.—The Sherman Telephone Company has been organized, with a capital stock of $2,000. The incorporators of the company are as follows: J. C. Emery, Geo. R. Moir, K. H. DeLong, Wm. Brink, and others.

FREMONT CENTER, N. Y.—The Fremont Center Telephone Company has been organized with the following officers: President, George Sipple; secretary, W. P. A. Emrich; treasurer, R. Whitmore; manager, W. Swickhart.

HARPER, Kans.—A farmers' telephone company has been formed for the purpose of extending a line into Harper. The officers of the company are as follows: President, L. A. Heck; secretary, J. N. Baker; treasurer, D. E. Boleman.

ELIZABETHTOWN, Ill.—The Hardin County Telephone Company has been incorporated with a capital stock of $6,000. The incorporators of the company are as follows: Tudorf O. White, Daniel W. Whittenberg, Robert Thacker.

GUTHRIE, Okla.—The Cottonwood Valley Telephone Company has been incorporated with a capital stock of $325,000. The incorporators are W. H. Chappell, A. Ellison, G. W. Omart, G. W. Gaffney, W. H. Dody and S. H. Oleson.

BURLINGTON, Pa.—The company which had in project the construction of a telephone line from Burlington to Luther Mills has been revived and reorganized under the name of the Wonder Worker Mutual Telephone Company.

GREENEVILLE, Tenn.—The Greeneville Telephone Company has been incorporated with a capital stock of $300. The incorporators of the company are as follows: David Hope, L. P. Campbell, W. A. Jones, M. D. Ellis, E. M. Sentelle.

MARYSVILLE, O.—The Union County Telephone Company has been incorporated. Capital stock, $200,000. The incorporators of the company are Newton E. Liggett, Walter C. Fullington, W. C. Shearer, G. E. Whitney, H. E. Conkright.

RAKE, Ia.—A new telephone company has been organized in this vicinity with the following officers: President, A. J. Sabin; secretary, Carl Anderson; treasurer, C. O. Grevlos; directors, August Boettcher, Frank Nerring, Ed O. Halverson.

GLOVERSVILLE, N. Y.—The Independent Telephone Company has been incorporated with a capital stock of $5,000. The incorporators are Frederick M. Young, Gloversville; William T. Briggs and A. Judson Baker, both of Johnstown; and others.

CHICAGO, Ill.—The Kankakee Water, Light and Railway Company has been incorporated with a capital stock of $5,000 for the purpose of operating light and telephone plants. The incorporators are J. C. Williams, J. R. Huling, H. M. Walker.

HANNIBAL, N. Y.—The Hannibal and Martville Telephone Company has been incorporated with a capital stock of $1,000. The incorporators are Bert Howland, Martville, N. Y.; George Crofoot and Julius P. Rhodes, Hannibal, N. Y.; and others.

ADEL, Mont.—The Adel Telephone Company has been incorporated with a capital stock of $10,000, of which $2,000 has been subscribed. The incorporators of the company are as follows: F. N. Askew, J. L. Burch, F. M. Bingham and others.

ROSEBORO, N. C.—The Roseboro and Fayetteville Telephone Company has been chartered with a capital stock of $10,000, to operate lines between the two towns and in other sections. A. M. Brittain is one of the promoters of the enterprise.

HAVRE, Mont.—The Havre-Box Elder Telephone Company has been organized with a capital stock of $5,000. The officers of the company are as follows: President, J. S. Almas; vice-president, J. F. Valadon; secretary and treasurer, Henry J. Meili.

ONAWA, Ia.—Th Soldier Valley Telephone Company has been incorporated with a capital stock of $5,000. The officers of the company are as follows: President, S. D. Crary; vice-president, J. N. Riddle; treasurer, H. A. Tinker; secretary, N. C. Buskirk.

JEFFERSON, O.—The Jefferson Citizens' Telephone Company has been organized and a franchise will be asked for at once. The company proposes to install a modern plant and seek connections over the Independent lines to all parts of Ashtabula county

HAMMONDSPORT, N. Y.—The Hammondsport Telephone Company has been incorporated with a capital stock of $3,000. The incorporators of the company are as follows: John W. Scott, Lenn D. Mason, and Morris A. Hoyt, all of Hammondsport, and others.

WEATHERFORD, Okla.—The Northern Mutual Telephone Company has been incorporated with a capital stock of $3,000. The directors of the company are as follows: W. S. Wood, Weatherford; Joseph Wolverton, Indianapolis, Okla.; W. A. Coddington, Weatherford.

DOWNSVILLE, N. Y.—The Downsville Telephone Company has been incorporated with a capital stotck of $10,000. The incorporators are as follows: E. Burnham Guild, Edward A. Holmes, Charles E. Hulbert and Edward E. Conlon, all of Downsville, and others.

MIDDLETON, Okla.—The Middleton, Division, and Peckham Telephone Company has been incorporated with a capital stock of $200. The directors of the company are as follows: H. S. Hock, Richard Sherton, Peckham; A. J. Johnson, Middleton; W. J. Sherbon, Wilber.

BREESPORT, N. Y.—The Breesport Telephone Company has been organized with the following officers: President, Charles Kinley; vice-president, G. A. Campbell; secretary and treasurer, Harry B. Harding; general manager, Samuel Campbell; director, D. L. V. Colgrove.

CRESBARD, S. D.—Articles have been filed for the Farmers' Mutual Telephone Company of Faulk county, with a capital stock of $15,000. The incorporators of the company are John J. Pierce, R. M. Griffith, Frank Currier, H. W. Reinecke, O. A. Swift, Wm. A. Lehman.

ELDON, Ia.—The Farmers' & Merchants' Mutual Telephone Company has been incorporated with a capital stock of $6,000. The officers of the company are as follows: President, S. S. Glotfelty; vice-president, J. H. R. Spilman; secretary, H. J. Israel; treasurer, Elmer E. Hilles.

MAYFIELD, Ky.—The Mayfield Home Telephone Company has filed articles of incorporation with a capital stock of $50,000. The incorporators of the company are J. C. Monteith, Bloomington, Ind.; J. E. Burgin, Nantoit, Pa.; W. B. Stanfield, C. C. Wyatt and Leon Evans of Mayfield.

BERNVILLE, Pa.—The Rural Telephone Company has been organized at this place with the following officers: President, Willis Bright; secretary, S. T. Border; treasurer, J. M. Bordner; directors, Willis Bright, J. M. Bordner, John Snyder, Amos Berger, James Reeser, Chas. Reeser.

CHARLOTTE, Ark.—Articles of incorporation of the Charlotte Telephone Company, to maintain lines from Charlotte, Ark., to Batesville and Wade's Camp, have been filed with the secretary of state. The capital stock of the company is $1,500, all subscribed. The officers of the company are as follows: President, W. P.

Jones; vice-president, J. C. McGill; secretary and treasurer, C. H. Hogan.

BROWNING, Mo.—The Browning Telephone Company has been incorporated at this place. The officers of the company are as follows: President, H. C. Taggart, of Linneus; vice president, J. C. Green, Browning; secretary, A. C. Hutchinson, Purdin; treasurer, H. T. Young, Purdin.

WINCHESTER, IND.—The Eastern Indiana Telephone Company has been incorporated with a capital stock of $150,000. The directors of the company are as follows: Bader S. Hunt, James S. Engle, Alonzo L. Nichols, James A. Browne, James M. Fletcher and Robert Litschert.

PAWNEE, Ill.—Articles of incorporation have been filed with the secretary of state for the Sangamon County Telephone Company, with a capital stock of $20,000. The stockholders are as follows: Edward Baxter, Hiram White, Alvin Underwood, Eli Weber, J. M. Ketterer, Eva Farnum.

WEST CATON, N. Y.—The West Caton Telephone Company has been formed at this place with the following officers: President, Joseph E. Barber; vice-president, James Marcy; secretary, Louis Barnard; treasurer, Frank Dow; directors, Jay Wellman, Louis Elliott, Lester Thomas.

BLUECREEK, Wash.—The Bluecreek & Columbia Telephone Company has been organized with the following officers: President, B. Oppenheimer; vice-president, C. W. Stanley; secretary, A. W. Anderson; treasurer, C. D. Damson; trustees, T. A. Baslington, A. Fisher and Frank Schmidt.

HILL CITY, Kan.—The Rice Telephone Company has been organized with a capital stock of $1,500. The officers of the company are as follows: President, A. J. Rice; secretary, D. J. Hanna; treasurer, L. H. Rice; directors, Dr. N. Crank, D. J. Hanna, A. Law, L. H. Rice, A. J. Rice.

MONMOUTH, Me.—The Lewiston, Greene and Monmouth Telephone Company has been incorporated, with a capital stock of $10,000. The directors of the company are as follows: President, R. Alden, Winthrop, Me.; treasurer, H. M. Blake, Monmouth, Me.; clerk, H. E. Merrill, Monmouth.

BICKLETON, Wash.—The Eastern Klickitat Telephone Company has been organized with headquarters at this place. The purpose of the organization is to construct a line from Bickleton to Cleveland and throughout the surrounding country. R. E. Jackson of this place is the chief promoter of the enterprise.

REDDING, Ark.—Articles of incorporation have been filed with the secretary of state for the Ozark & St. Paul Telephone Company with a capital of stock of $5,000. The officers of the company are as follows: President, B. M. Welton; vice-president W. T. Bateman; secretary, J. A. Bateman; treasurer, G. H. Davis.

CALDWELL, O.—The Citizens' Telephone Company has been incorporated with a capital stock of $30,000. The incorporators of the company are: H. W. Kunz, V. K. Herlan, J. A. Lemmax, Edward Spannagel, Charles H. Dew, L. W. Wheeler, J. H. Sparling, Florence Meek, E. S. Wilson, H. R. McClintock, William Simmins.

OSCEOLA, Wis.—The Osceola Farmers' Mutual Telephone Company has been organized at this place with the following board of directors: John Getschel, Sam Francois, A. E. Roese, Charles H. Oakley, George A. Taylor, Osceola; Anton Nelson, Frank L. Corey and George F. Clark, Dresser Junction; A. F. Bursch, Otisville, Minn.

RISING SUN, Ind.—The Salem Ridge Mutual Telephone Company has been incorporated, with a capital stock of $2,500. The directors of the company are as follows: William A. Rockafellow, Charles Rice, George A. Woods, John A. Hamilton, H. Clay Miller, George H. Keeney, Albert Corson, William Hastings, Clifford W. Monroe.

BOLTON, Mass.—A certificate of organization has been filed for the Bolton Telephone Company with a capital stock of $1,500, to succeed the Bolton Co-operative Telephone Company. The officers are as follows: President, Edward D. Emerson; treasurer, J. Wilkinson Clapp; directors, Edward D. Emerson, J. Wilkinson Clapp, Guy T. Emerson.

BIG RAPIDS, Mich.—A number of interested farmers have formed an organization known as the Big Rapids, Lilley and Bitely Telephone Company for the purpose of constructing a telephone line connecting the three towns. The following officers have been elected: President, John M. Jacks; secretary, E. Mossey; treasurer, David Moose.

TOCSIN, Ind.—Articles of incorporation have been prepared for the Tocsin Telephone Company, which will operate in the northern part of the country, principally among the farmers. The company takes over the business and property of a system which already has a number of telephones in service. The capital stock of the company will be $10.000.

CINCINNATI, O.—The Queen City Home Telephone Company has been incorporated with a capital stock of $10,000, by Harry B. Gates, George W. Beers, Calvin Vos, C. B. Matthews and Max Silberberg. The articles state the purpose to be to construct and operate telephone and telegraph lines and plants in Cincinnati and in the villages of Hamilton county.

BUFFALO, N. Y.—A certificate of incorporation has been filed for the Gail-Webb Manufacturing Company, with a capital stock of $25,000. The directors of the company are Henry M. Gail, A. M. Gail, Hyatt W. Smith, of Buffalo, and John W. S. Webb and Charles W. Webb of Cleveland. It is the purpose of the company to manufacture and sell telephones and electrical and mechanical apparatus.

COLUMBUS, O.—Incorporation papers for a new telephone company to be known as the Queen City Telephone Company of Cincinnati have been filed in this city. Harry Gates of the Queen City Telephone Company and George Beers of Fort Wayne, Ind., are among the incorporators. The new company will ask the next council for a franchise. A revision of the state telephone laws will be sought from the next legislature.

BEATRICE, Nebr.—Articles of incorporation for the New Home Telephone Company of Gage county have been filed with the county clerk. The capital stock is $200,000 and the incorporators are: F. H. Wood of Lincoln, and J. F. Hemenway and J. H. Myers of New York. The new company will take over the present Independent company now giving service at this point under the name of the Home Telephone Company, and will enlarge and extend its business to many towns in this section of the state and northern Kansas. It is reported that the company will connect its lines with the Lincoln Telephone Company, and establish a service from Lincoln as far south as Winfield, Kan., at which place Mr. Hemenway is interested in the telephone business.

LOS ANGELES, Cal.—Two companies have been organized here, which have for their purpose the construction and maintenance of long distance telephone lines in what is known as the Puget Sound Country. The Northwestern Long Distance Telephone Company has incorporated with a capital stock of $1,500,000, of which $200,000 has been subscribed. With the cities of Portland, Seattle, and Tacoma as centers, it is proposed to connect all the prominent cities of the northwest, even crossing into Vancouver, B. C. The length of mileage at present contemplated is 2,000 miles. The Puget Sound Telephone Construction Company has been incorporated with a capital stock of $200,000 to do the construction work. The directors in both companies are as follows: C. H. Randall, G. K. Barrere and H. E. Rice, all of Los Angeles.

ELECTIONS AND MEETINGS

BADGER, Ia.—The Badger Telephone Company will construct a number of rural lines.

ANAMOSA, Ia.—The Jones County Telephone Company, at its annual meeting elected Otto Wettstein, Jr., as president and C. E. Tilt vice-president.

CLAY, Ia.—The Northern Rural Telephone Company has elected the following directors: Harry Heikens, Summit; Fred Jaynes, Freeman; J. C. Johnson, Clay.

MILFORD, Nebr.—At the annual meeting of the Farmers' Mutual Telephone Company a complete set of officers were elected, George C. Fosler being elected president.

PITTSTOWN, N. Y.—The Pittstown Telephone Company at its annual meeting elected William B. Cushman as president and John B. Cushman secretary and treasurer.

YATES CITY, Ill.—The Ideal Telephone Exchange held its annual meeting in this place and elected the following directors: R. J. Keighan, C. M. Bliss, Joseph Hunter.

ANDES, N. Y.—The Andes and Hamden Telephone Company has elected officers as follows: President, D. D. K. George; secretary, James Jack; treasurer, Adam Sutherland.

SAVANNAH, Ga.—At the semi-annual meeting of the stockholders of the Georgia Telephone Company, held in this city, the directors declared a semi-annual dividend of 2½ per cent.
Norton; treasurer, H. R. Coplin; secretary, E. E. Schultz; directors, A. Westing, E. D. Norton, H. R. Coplin, W. Z. Parmenter, E. J Latta, A. S. Howard, G. W. Wolcott, Stephen Schultz.

PEARL CITY, Ill.—The Mutual Telephone Company has elected the following officers: President, D. L. Mitchell; manager, Lewis Housel; directors, Lewis Kuhlemeier and Lewis Housel.

CAMDEN, Mich.—At the annual meeting of the stockholders of the Camden Telephone Company Henry Hayes was re-elected president, B. R. Alward treasurer and S. E. Haughey secretary.

BAINBRIDGE, N. Y.—The annual meeting of the stockholders of the Bainbridge Telephone Company was held the 16th inst. for the purpose of electing officers and transacting other business.

RED WING, Minn.—The Red Wing Telephone Company has elected the following officers: President, A. P. Pierce; vice-president, C. A. Ramussen; secretary and treasurer, D. M. Neill.

QUINCY, Ill.—The Quincy Long Distance Telephone Company has elected the following officers: President, R. F. Spencer; vice-president, C. M. Polk; secretary and treasurer, J. H. Murphy.

MORRISON, Ill.—The Whiteside Mutual Telephone Company has elected the following officers: President, Will Boyd; vice-president, H. L. Ewing; secretary, C. E. Johnson; treasurer, R. E. Cochran.

MARYSVILLE, Mo.—The People's Telephone Company has elected the following officers: President, Charles Garrett; vice-president, R. H. Duncan; secretary, John Evans; treasurer, A. S. Watson.

MILFORD, Ia.—The Midland Telephone Company elected P. Rasmussen, Dr. Q. C. Fuller and Carl Torsteson directors for three

years. The affairs of the company are in a highly prosperous condition.

FINCHFORD, Ia.—The Finchford Mutual Telephone Company has elected the following officers: President, C. H. McBride; vice-president, John Silver; secretary, G. A. Evenson; treasurer, W. S. Beaty.

MIDDLEFORK, Ind.—The Middlefork Telephone Company has elected the following officers: President, Eugene Floyd; secretary, E. M. Catron; treasurer, W. D. Thomas; general manager, J. Catron.

PATON, Ia.—The Paton Telephone Company held its annual meeting in this place and elected directors for the ensuing year. The new board of directors will meet on the 18th inst for the election of officers.

BLACKFORK, O.—The Monroe Telephone Company has elected the following directors for the coming year: T. A. Parry, D. B. Leiter, B. F. Hoover, H. E. Hess, W. H. Culler, E. F. Blust, Charles Basore.

CHILLICOTHE, Mo.—At a meeting of the stockholders of the People's Telephone Company the old directors were re-elected with the exception of E. C. Orr, resigned, who was succeeded by Seymour Wigely.

JOSLIN, Ill.—At its annual meeting the Crescent Telephone Company elected the following officers: President, W. H. Whiteside; vice-president, John Schaffer; secretary, A. A. Matthews; treasurer, R. L. Burchell.

CAMBRIDGE, Me.—At the meeting of the stockholders of the Cambridge Telephone Company the following directors were elected: W. B. Whitney, F. R. Ring, M. A. Randall, W. H. Ring, Dr. J. H. Wilson.

EUREKA, Ill.—The Farmers' Mutual Telephone Association held its annual meeting in this city recently. The following officers were elected: President, George Doward; secretary, H. M. Leonard, treasurer, A. B. Culp.

BATESVILLE, Ind.—The stockholders of the Batesville Telephone Company have elected the following officers for the ensuing year: President, Aug. Bloemer; secretary, O. L. Newman; treasurer and manager, Wm. Krieger.

CONKLIN, N. Y.—At the annual meeting of the Conklin Telephone Company the following officers were elected: President, J. L. Engelbert; vice-president, L. C. Benedict; treasurer, C. R. Webb; secretary, A. R. Vosbury.

MORENCI, Mich.—The stockholders of the Morenci Telephone Company recently elected directors for the coming year. W. W. Crabbs was chosen president and manager. The secretary's report showed a substantial growth.

DANSVILLE, Mich.—The Dansville, Vantown and Williamston Citizens' Mutual Telephone Company has elected officers as follows: President, Lewis Austin; vice-president, Henry Culver; secretary, Chas. Brownell; treasurer, Jerome Weston.

LYNDON, Wash.—The farmers' Mutual Telephone Company has elected the following officers: President, Edward Brown of Custer; vice-president, J. W. Sefton of Everson; secretary, S. P. Bailey, Lynden; treasurer, J. C. Gillies, Nooksack.

CASTLETON CORNERS, N. Y.—The Castleton Corners Independent Telephone Company has elected the following officers: President, William Hauser; vice-president, Henry Hoffman; treasurer, George Schaffer; manager, Maurice H. Gescheidt.

WEST EXETER, N. Y.—At a meeting of the stockholders of the West Exeter and West Winfield Telephone Company the following officers were elected: President, John H. Watkins; vice-president, D. W. Morris; secretary, J. Able Davis.

LE MARS, Ia.—The directors of the Plymouth County Telephone Company have re-elected the following officers: President, A. C. Colledge; vice-president, F. A. Post; secretary and treasurer, O. L. Loudenslager; superintendent, Charles Lettow.

PAWNEE, Ill.—The Sangamon County Telephone Company recently incorporated has completed its organization by electing the following officers: President, Edward A. Baxter; vice-president, Eli Weber; secretary and treasurer, H. E. Farnam.

SPRINGFIELD, Tenn.—The directors of the Springfield Home Telephone Company, recently incorporated, have elected the following officers: President, Thomas Pitt; vice-president, John McMurry; secretary, A. L. Dorsey; treasurer, H. T. Stratton, Jr.

NEZ PERCE, Idaho—The Nez Perce Co-operative Telephone Company at its annual meeting re-elected its old officers as follows: President, F. W. Mitchell; vice-president, F. A. Boozer; treasurer, O. W. Click; manager, J. M. McGee; secretary, J. R. Stanley.

OKABENA, Minn.—The Okabena Telephone Company has elected the following officers: President, Geo. Morrison; secretary, A. H. Melville; treasurer, H. W. Aherns; directors, A. H. Melville, J. C. Ruthenbeck, H. W. Aherns, Geo. Morrison, Conrad Hussong.

SKOWHEGAN, Me.—The Somerset Farmers' Co-operative Telephone Company held its annual meeting at this place and elected officers as follows: President, Judson Packard, of Skowhegan; manager, F. L. Ames of Norridgewock; treasurer, Charles Holbrook.

PORTLAND, Me.—At the annual meeting of the stockholders of the Northeastern Telephone Company the following officers were elected for the following year: President, Thomas R. Brooks, Scranton, Pa.; vice-president, Melville H. Kelly, Saco, Me.; treasurer, Edward R. Gearhart, Scranton; clerk, Oscar H. H. Hersey, Portland.

BLUFFTON, O.—The Bluffton Mutual Telephone Company has elected the following officers for the ensuing year: President, J. Sheller; vice-president, J. C. Welty; secretary, A. C. Diller; treasurer, John Bixel; trustees, D. H. Weaver, Noah Moser, Chas. Lambert.

MANKOTA, Minn.—The Rapidan-Mankato Telephone Company has re-elected the following officers: President, F. O. True; vice-president, George Ballard; traesurer, William Jamieson; secretary, A. L. Viegel; directors, Erick Holberg, C. Strand, Joseph Kern.

ALAMO, Ind.—The Alamo Co-operative Telephone Company has elected the following directors for the coming year: James Hapwood, Wallace McClure, William Swearingen, Edgar Etter, Aaron Walter, J. B. Griffin, David S. Myers, Charles Pickett and Jesse Glore.

CHENANGO FORKS, N. Y.—At a meeting of the stockholders of the telephone company the old officers were re-elected as follows: President, Mr. Hayes; treasurer, William Ransom; secretary, Fred Skinner; manager, Fred M. Harding; assistant manager, Ward Gifford.

FAIRMONT, Minn.—The Fairmont Telephone Company has elected the following officers: President, P. R. Matson; vice-president, Cecil Sharpe; secretary and treasurer, D. S. Wade; directors, P. R. Matson, W. W. Ward, Cecil Sharpe, H. W. Sinclair, Malcolm Aldrich.

PATON, Ia.—At the annual meeting of the board of directors of the Paton Mutual Telephone Company the following officers were elected for the following year: President, E. G. Elmore; vice-president, H. J. Drayer; secretary, K. C. Latta; treasurer, W. H. Fowler.

CLINTON, N. Y.—At the annual meeting of the stockholders of the Clinton Telephone Company the following directors were elected: George R. Fuller, T. S. Lane, Rochester; G. J. Caldwell, Cory D. Hayes, Clinton; T. Hervey Ferris, E. G. Cline and Chas. H. Poole, Utica.

DUTTON, Okla.—The Dutton Telephone Company which was recently chartered with a capital stock of $5,000, has elected the following officers: President, Edgar Diehl; vice-president, C. C. Fisher; treasurer, Oliver F. Pruett; secretary, E. G. Cornett; director, C. L. Frain.

WILTON, N. H.—The Wilton Telephone Company has elected the following officers: President, George E. Bales; secretary and treasurer, W. H. Emerson; general manager, H. L. Emerson; directors, George E. Bales, H. L. Emerson, F. W. Clark, C. E. Higgins, W. I. Durgin.

SHICKSHINNY, Pa.—The annual meeting of the Farmers' Telephone & Supply Company was held at this place recently and the following directors elected: C. F. McHugh, B. F. Croop, I. A. Long, Dr. C. A. Long, S. M. Whitesell, E. B. Koons, R. Shaw, M. W. Brittain, C. B. Wheeler.

ROCHESTER, N. Y.—The Automatic Telephone Company recently incorporated with a capital stock of $1,500,000 has the following directors: B. J. Williams, Shelby, O.; J. W. Lattig, John Raines, Canandaigua; Alvaro L. Thompson, Henry H. Stebbins, Jr., Joseph R. Webster and George R. Raines.

CAMDEN, Ind.—At its annual meeting the Camden Co-operative Telephone Company elected the following officers for the ensuing year: President, U. E. Tesh; vice-president, E. A. McFarland; secretary, J. H. Lesh; treasurer, Monroe Martin; general manager, Perry Rule; trustee, F. G. Armick.

JOHNSTOWN, Pa.—At the annual meeting of the stockholders of the Johnstown Telephone Company the old board of directors were elected, consisting of Charles Griffith, P. F. McAneny, Charles J. Mayer, H. H. Weaver, P. S. Fisher, John Emmerling, Dr. Lowman, William H. Smith, James P. Thomas.

KINCAID, Kans.—At the annual meeting of the Eastern Kansas Telephone Company held at Kincaid, January 9, the following officers were elected for the ensuing year: President, J. W. Garrison; vice-president, A. P. Caldwell; secretary and general manager, R. L. Fraser; treasurer, J. M. McCaslin.

SEWARD, Neb.—At the annual meeting of the Seward County Telephone Company the following officers were elected for the coming year: President, Jacob Geis; vice-president, J. P. Mayhew; secretary, J. H. Ritchie; treasurer, L. B. Gake; directors, E. H. Strayer, O. D. Thygeson, J. J. Thomas.

GLENBEULAH, Wis.—The Hull's Crossing Telephone Company has elected the following officers: President, Oliver Haslee; vice-president, Charles Roberts; secretary, J. H. Raeder; treasurer, F. W. Goessling; superintendent, Charles Stauss; directors, E. J. Couch, Ph. Raeder and G. W. Griesbach.

MERCER, Me.—At a meeting of the People's Telephone Company the old officers were re-elected as follows: President, H. T. Croswell; vice-president, A. M. Pattee; clerk, C. W. Morse; auditor, C. E. Brown; treasurer, N. E. True; directors, A. M. Whitehouse, Henry Harris, C. E. Corson, N. E. True.

HAMMONDSPORT, N. Y.—At the annual meeting of the Bath and Hammondsport Telephone Company the following officers and directors were elected: President, J. W. Brundage; vice-president,

W. H. Dildine; secretary, Clark H. Bronson; treasurer, James H. Snellie; L. H. Gardner, W. A. Kniffin, I. H. Bronson.

BELLEVUE, O.—The Independent Telephone Company has elected the following directors: J. H. Beattie, Norwalk; A. K. McConnell, New London; B. T. Hearson, Attica; Wm. Hess, Monroeville; G. A. Wright, John P. Ruffing, Sol M. Wolf, C. R. Callaghan, Fred Wolfrom, Bellevue; James Verdin, Dover, Dela.; Frank A. Knapp.

LOWVILLE, N. Y.—The annual meeting of the Black River Telephone Company was held in this place recently and directors elected as follows for the coming year: George R. Fuller and Fred W. Zoller of Rochester, C. H. Poole and T. H. Ferris of Utica, C. W. Pratt and S. C. Capron of Boonville and J. J. Domser of Lowville.

HERKIMER, N. Y.—At a meeting of the stockholders of the Herkimer County Telephone Company the following officers were elected: President, James Conkling, Ilion; vice-president, G. R. Fuller, Rochester; secretary, W. I. Taber, Herkimer; treasurer, C. H. Poole, Utica; directors, the above officers, T. Harvey Ferris and Robert Earl.

PARSONS, Kans.—At a meeting of the board of directors of the Citizens' Home Telephone Company the following officers were elected: President, James A. Plotner, Kansas City; vice-president, G. H. Romaine, Oswego; treasurer, C. H. Kimball, Parsons; secretary, Fred H. Brown, Parsons; general manager, George H. Spangle, Chetopa.

NORTH SANFORD, N. Y.—At the annual meeting of the Delaware Valley Telephone Company, recently held in this city, the follownig directors were elected: J. W. Smith, E. E. Crane, C. A. Philley, U. D. Bailey, L. E. McCully, A. Colvin, D. D. Jones, Elmer Mills, Clark Henderson, C. B. Teed, C. W. Sampson, George Ireland, Floyd Gardiner.

YORK, Nebr.—The York County Telephone Company has elected the following officers for the coming year: President, G. H. Holdeman; vice-president, C. N. Beaver; manager and secretary, W. E. Bell; treasurer, H. M. Childs; directors, C. N. Beaver, Robert Beckford, Herman Diers, J. M. Bell, H. M. Kirkpatrick, E. E. Lincoln, G. H. Holdeman.

BLOOMFIELD, Ia.—The new board of directors of the Citizens' Mutual Telephone Company recently met in this place and the following officers were elected for the ensuing year: President, C. W. Carroll; vice-president, L. F. Christy; secretary, W. C. Durprie; treasurer, C. D. Evans; executive committee, C. W. Carroll, J. C. Brouhard, C. E. Young.

MARATHON, N. Y.—The Killawog Telephone Company has elected the following officers for the ensuing year: President, C. J. Tarble; vice-president, N. L. Shevalier; secretary, C. A. Brooks; treasurer, A. C. Adams; directors, C. J. Tarble, T. R. Hitt, E. J. Richardson, C. A. Brooks, A. C. Adams, A. C. Baker, W. S. Dickinson, N. L. Shevalier, J. W. Shevalier.

ROME, N. Y.—The Rome Home Telephone Company recently held its annual meeting in this city and elected officers as follows for the ensuing year: President, John S. Wardwell; vice-president, Daniel M. Hall; secretary, A. L. Ketcham; treasurer, C. H. Poole. The directors include the above officers and William J. Grogan, T. S. Lane and George R. Fuller.

ROCHESTER, N. Y.—At a meeting of the stockholders of the Stromberg-Carlson Company the following directors were elected: John C. Woodbury, Andrew Carlson, Albrecht Vogt, Carl F. Lomb, Charles E. Angle, Porter M. French, T. R. Finucane, Arthur J. Mahon. Mr. French succeeds Eugene Satterlee and Mr. Finucane succeeds his father, Thos. W. Finucane.

ATHENS, O.—At a meeting of the stockholders of the Athens County Home Telephone Company the following officers were re-elected for the following year: President, W. E. Moler; vice-president, G. W. Duffee; secretary, W. E. Peters; treasurer, A. F. Holmes; general manager, C. L. Jones. The company will make improvements in its lines and exchanges.

FT. WAYNE, Ind.—The Home Telephone Company has elected the following officers: President, C. S. Bash; vice-president, J. B. Reuss; treasurer, Max B. Fisher; secretary and general manager, William L. Moellering; directors, C. S. Bash, John B. Reuss, William L. Moellering, M. B. Fisher, Isador Lehman, P. W. Smith, G. Max Hoffman, W. A. Bohn, George T. Fox.

UTICA, N. Y.—The stockholders of the Utica Home Telephone Company held their annual meeting and elected the following officers and directors: President, E. B. Odell; vice-president, Henry F. Miller; treasurer, Edward Bushinger; secretary and general manager, Chas. H. Poole; Edward L. Barber, George R. Fuller, T. Harvey Ferris, T. S. Lane, William I. Taber.

CHARLOTTEVILLE, N. Y.—At the annual meeting of the Charlotteville Telephone Company the following officers were elected for the coming year: President, John Allen; vice-president, Luke Colliton; treasurer, Hiram Rifenbark; treasurer, Dr. M. Bruce; directors, C. E. Nichols, R. G. Nichols, Samuel Lape, James H. Brown, John Allen, Luke Colliton, Dr. M. Bruce.

SWEETSERS, Ind.—At the annual meeting of the Sweetsers Rural Telephone Company five new directors were elected as follows: George Williamson, Preston Shields, James Whiteman, O. L. Brumfil and L. N. Hoggett. The company has completed its third year and is in a prosperous condition, having started with 120 subscribers, and the number has now grown to 300. M. R. Lake is manager of the company.

ELDRIDGE, Ia.—The annual meeting of the stockholders of the Eldridge Telephone Company was recently held at this place and officers elected as follows for the ensuing year: President, F. C. Gaghagen; vice-president, Dr. J. B. Crouch; secretary, M. H. Calderwood; treasurer, H. W. Bruhn; directors, E. M. Burmeister, E. O. Munter, P. J. Meinert, Theo. Zabel, C. B. Barr.

EVENING SHADE, Ark.—The Sharp County Telephone Company has elected the following directors: G. H. Matheny, John M. Buchanan, J. W. Brown, T. I. Herrn, Thomas W. Simpson, C. J. Wilson, S. L. Guthrie, C. C. Price, Sam H. Davidson. President, C. J. Wilson; vice-president, S. L. Guthrie; secretary and general manager, C. C. Price; treasurer, Sam H. Davidson.

PERRYSBURG, O.—The Northern Ohio Telephone Company has increased the number of its board of directors from seven to nine by the election of the following: A. C. Butler, H. E. Riggs. Walter Brown was elected to succeed N. L. Hanson. With these exceptions the officers and directors were re-elected. The company operates exchanges at Perrysburg, Maumee and Whitehouse.

BOONE, Ia.—The stockholders of the Boone County Telephone Company held their annual meeting in this city and elected the following officers for the ensuing year: President, E. O. Montgomery; vice-president, F. L. Geoppinger; secretary and manager, C. C. Deering; treasurer, J. F. Herman. The board of directors includes the above officers and Dr. E. H. Melott, of Ogden.

CANTON, Mo.—At its annual meeting the Citizens' Telephone Company elected the following officers for the ensuing year: President, J. H. Blackburn, La Grange; vice-president, H. B. Burgess, Williamstown; secretary, G. W. Vaughn, La Grange; treasurer, J. G. Gnuse, La Grange; general manager, C. O. Raine; purchasing agent, P. N. Hanna; assistant manager, W. A. Clow.

WESTHOPE, N. D.—The annual meeting of the stockholders of the Westhope Telephone Company was recently held in this place and officers elected as follows: President, J. H. Trimble; vice-president, G. L. Lillie; secretary, C. Condit; treasurer, J. T. Neville. Reports showed the affairs of the company to be in good condition. The company contemplates extensions in the spring.

ROCKFORD, Ill.—The stockholders of the Home Telephone Company at a recent meeting elected the following officers: President, E. W. Brown; vice-president, H. H. Clough; secretary, John H. Camlin; treasurer, Frank Wormwood; directors, E. W. Brown, H. H. Clough, John H. Camlin, E. E. Bartlett, F. H. Worthington, William Sharpe, M. Duffield, C. L. Miller, Roscoe Chapman.

GRANTHAM, N. H.—At the annual meeting of the Sugar River Telephone Company the following officers were elected for the coming year: President, S. W. Gilman; vice-president, Guy M. Buswell; clerk, J. M. Howe; treasurer, Fredson C. Reed; directors, A. L. Barton, George H. Walker, Guy H. Buswell, M. P. Burpee, F. C. Reed. Dana S. Gross was appointed agent for the company.

DES MOINES, Ia.—The Western Electric Telephone Company of Britt, Ia., recently held its annual meeting in this place and elected the following officers for the coming year: President, E. B. Smith; vice-president, Thomas A. Way; secretary and treasurer, B. C. Way; directors, C. E. Yost, Omaha; Thomas A. Way, Wesley, Ia.; Truman A. Potter, Mason City; N. T. Guernsey and E. B. Smith, Des Moines.

CORTLAND, N. Y.—The Cortland Home Telephone Company held its annual meeting on the 5th inst. and elected the following officers: President, G. P. Walrod; vice-president, W. W. Nicholson; treasurer, G. J. Mayer; secretary, E. C. Wiley; manager, F. V. Bennett; directors, C. P. Walrod, W. W. Nicholson, C. D. Ver Nooy, G. J. Mayer, W. H. Foster, F. J. Peck, J. P. Dougherty, S. N. Holden, W. Earl Seamans.

BERGEN, N. Y.—At the annual meeting of the Bergen Telephone Company the following officers were elected for the coming year: President, George R. Fuller; vice-president, A. A. Sands; secretary C. M. Beattie; treasurer, C. E. Housel; directors, G. E. Best, George Sands, George E. Parish, Dr. R. M. Andrews, C. E. Housel, W. M. Sage, of Bergen; George R. Fuller, C. M. Beattie, W. T. Farrell and Fred Zoller of Rochester.

SIOUX FALLS, S. D.—At the annual meeting of the South Dakota Independent Telephone Association, just closed, the following officers were elected for the following year: President, C. B. Kennedy, of Canton; vice-president, J. A. Steninger, of Parker; secretary and treasurer, E. R. Buck, of Hudson. Executive committee: P. R. Crothers, of Brookings; G. W. Burnside, of Sioux Falls; M. B. Ryan, of Beresford; H. P. Hartwell, of Irene.

FRANKFORT, N. Y.—At the recent annual meeting of the Frankfort, East and West Schuyler Mutual Telephone Company officers were elected as follows: President, Aaron Eaton; vice-president, Elmer Ladd; secretary and treasurer, L. H. Robinson. The company decided by unanimous vote to change from the series to metallic bridge system and to establish an Independent exchange, in which it is thought other county lines will unite.

ASHLAND, O.—At the annual meeting of the stockholders of the Star Telephone Company the following officers were elected: President, G. A. Ullman; vice-president, S. H. Grabill; treasurer, George R. Freer; secretary and general manager, Howard Swartz; directors, George A. Ullman, T. G. Stence, Joseph Brown, S. H. Grabill,

J. R. Swartz, F. N. Patterson, Ashland; Charles Graf, Loudonville; Chas. Rowland, Lodi; Ira A. Everhand, Wadsworth.

LAKE CRYSTAL, Minn.—The Blue Earth County Telephone Company has elected the following officers for the ensuing year: President and manager, E. A. Upson; secretary, David E. Bower, Cambria; treasurer, D. E. Crane, South Bend; trustee, Samuel Hellickson, Butternut Valley. The earnings of the company for 1905 were $4,000. The company is in a prosperous condition.

SIOUX CITY, Ia.—The New State Telephone Company has elected the following officers and directors for the ensuing year: President, Charles G. Cockerill; vice-president, W. H. Leathers; second vice-president, Joseph Mattes; treasurer, M. M. Head; directors, Charles G. Cockerill, Jefferson; M. M. Head, Jefferson; Ira Conger, Cherokee; Joseph Mattes, Odebolt; W. H. Leathers, Mapleton; Fred Marquis, Onawa; C. H. Smith, Sioux City.

WASHINTON, Ga.—At a meeting of the stockholders of the Wilkes Telephone & Electric Company the old officers were re-elected as follows: President, J. A. Moss; secretary and treasurer, Boyce Ficklen. Reports showed the affairs of the company to be in good condition. During the past three years of its existence this company has paid its stockholders more than 60 per cent in dividends. The lines of the company extend all over the county.

CHELSEA, Vt.—The Orange County Telephone Company has elected the following officers for the coming year: President, G. R. Andrews of Northfield; vice-president, E. H. Kennedy of Chelsea; secretary and treasurer, R. H. Williams of West Corinth; auditor, George L. Stow of Chelsea; directors, E. H. Kennedy, Dr. E. E. Ellis, G. R. Andrews, J. B. Adams, Dr. Charles N. Barber, W. C. Daniels, A. L. Patterson, Cyrus U. Lathrop, George C. Hastings.

MANSFIELD, O.—The annual meeting of the stockholders of the Mansfield Telephone Company was recently held at this place and officers elected as follows: President, S. N. Ford; vice-president, John L. Baxter; secretary and treasurer, M. D. Ward; manager, S. E. Ward; directors, B. J. Balliet, John L. Baxter, A. B. Beverstock, Frank W. Bloor, Louis Brucker, F. M. Bushnell, A. L. Cameron, Reid Carpenter, S. N. Ford, W. E. Loughbridge, W. B. Martin, Burton Preston, J. A. Rigby, C. W. Upson, M. D. Ward.

NEW YORK, N. Y.—The stockholders of the New York Electric Lines Company, which controls the new subway franchise, and which is controlled by the new Independent Telephone Company, have elected the following officers: President, William Graves; vice-president, Herman G. Loew; secretary, Wayne W. Wilson; treasurer, D. A. Reynolds; manager, George R. Bidwell; directors, George R. Bidwell, William Graves, Richard M. Montgomery, Wayne W. Wilson, Edward M. Millard, Herman G. Loew, Percival E. Jones, D. A. Reynolds, George Riley.

TRENTON, N. J.—The annual meeting of the Interstate Telephone Company was held in this city recently and the old officers re-elected as follows: President, H. R. Swartz; first vice-president, William S. Hancock; second vice-president, C. W. Kline; treasurer, Barker Gummere, Jr.; general superintendent and secretary, F. A. Demarest; directors, W. S. Hancock, Barker Gummere, Jr., Governor E. C. Stokes, H. H. Hamill, H. C. Loudenslager, C. W. Kline, G. R. Bedford, John Markle, Allen C. Bakewell, J. W. Crelin, R. P. Wilson, W. H. Smith, Jr., G. N. Richard, Thomas Dougherty, H. R. Swartz.

ROCHESTER, N. Y.—The annual meeting of the Independent Telephone Securities Company, a subsidiary company of the Rochester Telephone Company, was held in this city and the following officers and directors were elected: President, George R. Fuller; vice-president, John C. Woodbury; secretary and treasurer, Frederick W. Zoller; directors, the above named officers and Chas. H. Poole and T. Hervy Ferris. The Independent Telephone Securities Company was organized as a holding company, to take over the various Independent telephone companies acquired by the Rochester Telephone Company.

ROCHESTER, N. Y.—At the annual meeting of the stockholders of the Rochester Telephone Company the following officers were elected: President, George R. Fuller; vice-president, John C. Woodbury; secretary and treasurer, J. W. Taylor; directors, George R. Fuller, Albrecht Vogt, H. Wheeler Davis, Gustav Erbe, George F. Roth, Rufus A. Sibley, Jacob Gerling, J. Foster Warner, Edward W. Peck, Louis Griesheimer, John C. Woodbury, J. Craig Powers, Joseph W. Taylor, Frederick W. Zoller, George Seager, William T. Farrell, John P. Haley, Charles G. Vickery, James Barry, Frank T. Byrne.

HAMILTON, O.—At the annual meeting of the Hamilton Home Telephone Company the report of Manager W. Gilbert Thompson showed that during the past year the company has increased its service by over 600 telephones; has built 76 miles of pole line; put in over 30,000 feet of cables and 32 miles of copper wire in Hamilton; has strung 210 circuit miles of iron wire in the country, and has earned about $50,000. The company will have quite a surplus left after paying all fixed charges and dividends on both common and preferred stock and will probably expend about $35,000 during the ensuing year for additions to extensive country lines.

PARKERSBURG, W. Va.—The stockholders of the West Virginia Western Telephone Company at their annual meeting re-elected the old board of directors as follows: J. H. Lininger, Harrisville; J. E. Carle, Eatons; R. H. Rutherford, Zanesville, O.; C. T. Hiteshaw, Parkersburg; A. C. Davis, Parkersburg; Robt. M. Browse, Grape Island; J. P. Sharp, Waverly; Richard Wanless, Cairo; Ben S. Pope, Parkersburg; Dr. G. D. Jeffers, Parkersburg; H. G. Feller, St. Marys. The directors have elected the following officers: President, J. H. Lininger; vice-president, J. E. Carle; secretary, R. H. Rutherford; treasurer, C. T. Hiteshaw; general superintendent and office manager, A. C. Davis.

ORDINANCES AND FRANCHISES

NEW CAMBRIA, Kans.—A charter has been granted for a new telephone system in this place.

LAMAR, Colo.—The Big Bend Rural Telephone Company has applied for a franchise in Lamar.

BOONVILLE, Mo.—Sherman Winter has been granted permission to build telephone lines in Boonville.

HYMERA, Ind.—An ordinance has been passed granting a franchise to the Hymera Telephone Company.

CHINO, Cal.—The Home Telephone Company of this place has applied for a franchise in San Bernardino.

EVANSVILLE, Ind.—The Pocket Telephone Company recently incorporated in this city has applied for a franchise.

MOREHEAD, Tenn.—The city will let a franchise to the highest bidder for the construction and operation of a telephone system.

GILMAN, Ill.—The Eastern Illinois Telephone Company, with headquarters at Kankakee, has been granted a franchise to operate

KING CITY, Cal.—F. J. Griffin has been granted a franchise to erect a telephone line from King City to Louock and Priest Valley.

LA MOURE, N. D.—A franchise has been granted the La Moure County Telephone Company for a telephone line from Adrian to Jamestown.

AURORA, Ill.—The Interstate Telephone & Telegraph Company is making preparation for the extension of its lines into the city of St. Charles.

RUSTON, La.—G. M. Hardy, W. E. Henkel, S. M. Lewis and P. D. Mitchell have secured a franchise for the construction of a telephone system.

CALISTOGA, Cal.—R. F. Grisby, representing the Palisade Mining Company has petitioned the town authorities for a franchise to maintain a telephone system in Calistoga.

WASHINGTON, Pa.—After a long fight the Pittsburg & Allegheny Telephone Company has secured a franchise in this city. Work will be started at once on a new telephone exchange building.

ROCKFORD, Wash.—The Rockford & Mount Hope Telephone Company has made application to the county commissioners for a franchise to construct and operate telephone lines near the town of Rockford.

RENO, Nev.—J. H. Anderson of Tulare and W. D. Arnett and Lee Davis of Reno have applied for a franchise to operate an Independent telephone system in Reno. If the franchise is granted work will begin at once.

CROOKSTON, Minn.—It is stated that the Tri-State Telephone Company will seek a franchise from the city council for the installation of a system in this city. The attitude of the city council toward granting the franchise seems favorable.

NEW LEXINGTON, O.—T. J. Smith and J. B. Rhodes have received a telephone franchise from the city council of New Lexington and will at once begin the construction of telephone lines throughout Perry county in conjunction with the Independent toll service.

ANGELICA, N. Y.—At a recent meeting of the board of trustees of the village a franchise was granted to Frank Sullivan Smith, receiver of the Pittsburg, Shawmut and Northern Railroad Company, giving that company the right to build and maintain a telephone system in Angelica.

GALESBURG, Ill.—The city council will reconsider the matter of granting the Galesburg Union Telephone Company a new franchise, which was refused the company at a recent meeting, and it is believed a franchise will be granted that will be agreeable to both the council and the company.

CANASTOTO, N. Y.—The promoters of the Independent telephone scheme who have been trying to gain a foothold in Oneida, are negotiating for a franchise to install an exchange in Canastoto. Assemblyman R. J. Fish of Oneida and Chaplain Herrick of Auburn prison are interested in the enterprise.

WINNIPEG, Man.—The Independent Telephone Company, which endeavored to secure a charter from the legislature last session, will renew its application this year. The application last year was shelved in order to allow the government to consider the question of establishing a system throughout the country.

BRANTFORD, Ont.—The city council has granted a twenty-one year competitive franchise to the Canadian Telephone Machine Company in the city of Brantford. The company must be operating within one year and must give residence telephones at $15 and business telephones at $25 per year. The city may buy out the plant at any time after three years by paying its present worth, plus estimated profits up to the end of ten years, and merely by paying the worth of

the plant if acquired after ten years. Provision is made for underground wires.

NEW YORK, N. Y.—When it was learned that the Great Eastern Telephone Company was planning to enter the city on the strength of a franchise which had been granted to the New York Electric Lines Company in 1885, and which had been acquired by the former company, a petition was lodged by Abraham Sartorius with Attorney General Mayer asking him to begin an action on behalf of the people for the annulment of the franchise on the ground that it had become void for non-use for twenty years. A hearing will be given January 13.

NORTH VERNON, Ind.—The Independent Telephone Company has petitioned the city council to amend its franchise so that an increase in rates may be possible. Originally the telephone system in this county was owned by private individuals and was known as the Jennings County Telephone Company and the North Vernon and Vernon Telephone Company. These two companies, owned by the same individuals, secured a twenty-five year franchise and the maximum rates were fixed at $1 a month for residences and $2 a month for business houses. Since the property was taken over by the Independent company, improvements have been added and the company now claims it is operating at a loss.

NEW CONSTRUCTION

BLACKFOOT, Idaho.—The Blackfoot Telephone Company will remodel its system.

BELLAIRE, Mich.—The Traverse Bay Telephone Company will install a new switchboard.

MAPLETON, Kans.—The Osage Valley Telephone Company will install an exchange in Mapleton.

CEDARVILLE, Ill.—The Cedarville-Stephenson County Telephone Company will construct additional lines.

HECLA, S. D.—The Farmers' Telephone Company of this place will build a telephone line into Aberdeen.

MADRID, Ia.—The Madrid Ice and Telephone Company will install a new switchboard in its exchange.

ENTERPRISE, Pa.—The Enterprise Telephone & Telegraph Company will construct a line to Bird-In-Hand.

RURAL RETREAT, Va.—The old Rural Retreat and the Mutual Telephone companies have been consolidated.

DETROIT, Kans.—A. H. Diehl, manager of the Pleasant Hill Telephone Company, will construct additional lines.

GRAVETTE, Ark.—The Potter Telephone Company of Gravette will build lines to Shambeau Ferry and Anderson, Mo.

FALCONER, N. Y.—The Home Telephone Company of Jamestown will install a telephone exchange in this place.

SAVAGE, Minn.—The Star Telephone Company of Lakefield contemplates establishing a telephone exchange in this place.

EUREKA, Ind.—The Eureka Telephone Company contemplates the construction of a telephone line from Dixie to Corydon.

LONGBEACH, Miss.—Richard Inglis has been granted the right by the council to install a telephone system in the town of Longbeach.

SILVER CITY, Ia.—The Independent Telephone Company is preparing to build a new line south of town and install its new system.

MILES CITY, Mont.—K. McLean and others propose to construct a telephone line from Miles City down the Yellowstone River to Shirley.

HANNIBAL, Mo.—M. E. Darnell of Carrollton, Mo., has been appointed general manager of the Bluff City Telephone Company of this city.

PAYETTE, Idaho.—The Independent Telephone Company is making arrangements to erect a new building for exchange and other purposes.

AKRON, O.—The People's Telephone Company contemplates the erection of a new building, to be used exclusively for the company's exchange.

MT. BLANCO, O.—The Rams Horn Telephone Company contemplates the construction of a telephone line from this place to Prattsville.

BEATRICE, Nebr.—The New Home Telephone Company, recently incorporated at this place, will soon begin the erection of a building to cost $20,000.

CARL JUNCTION, Mo.—The Spring River Mutual Telephone Company has been granted permission to construct a telephone line from Carl Junction to Asbury.

GREAT BEND, Kans.—Matt Dick of Great Bend is making arrangements to construct and maintain a number of farmer lines in the vicinity of Ellenwood.

DOYLESTOWN, O.—Negotiations are pending for the consolidation of the Marshallville & Rittman Telephone Company and the Millersburg & Orrville Telephone Company.

YOUNGSTOWN, Ind.—The board of directors of the Honey Creek Telephone Company has taken steps to overhaul the system and put in new lines here and in the surrounding country.

STURGIS, S. D.—The Charles Reed Land Company of this place is preparing to extend a telephone line to Reed post office, a distance of about sixteen miles. The route passes seventeen ranches and it is thought the owners may connect with the line. It is also hoped the line will be extended to embrace all the well settled regions in the vicinity of Sturgis.

LA FOLLETTE, Tenn.—The La Follette Water, Light and Telephone Company has closed contract under bond of $150,000 to have the lighting and telephone plants in operation by April 1.

PUEBLO, Colo.—The secretary of the interior has awarded the contract for distributing the telephone system in connection with the Huntley project, Montana, to Piper Bros., Pueblo, for $6,760.69.

ELKHART, Ill.—The business men of this place will install a local telephone system. It is the intention to install one hundred telephones and connection will be made with the Central Illinois Telephone and Telegraph Company's lines.

PULASKI, Tenn.—Having withdrawn its application for a franchise in the town of Pulaski, the Long Distance Telephone Company has announced that it will buy property on East Hill, outside the corporate limits, and establish an exchange there.

CHESTER, Mass.—A meeting of those interested in the construction of a telephone line connecting Blandford with Chester was held in this city recently. The following were appointed a committee on construction: A. L. Lewis, F. N. Gibbs, Herbert Cross. It is the intention to form a company to build and operate the line.

COLDWATER, Mich.—The Wolverine Telephone Company has bene consolidated with the Southern Michigan Telephone Company, with headquarters at Burr Oak. The stockholders in the Wolverine company receive stock in the new company. The contract calls for a complete set of cables and other equipment to be put in at once.

SHELBYVILLE, Ind.—The Mutual Telephone Company will soon begin the construction of a new plant. A building will be erected for exchange purposes, and all the wires in the business portion of the city will be laid underground. The improvements contemplated will involve the expenditure of several thousand dollars. It is expected the new plant will be in operation by the first of May.

ASHEVILLE, N. C.—Manager E. W. Stone of the Asheville Telephone Company has completed plans for the new building which the company will erect in connection with the underground telephone system, and bids are being asked for its construction. R. S. Lord has been engaged as local architect and will advertise for bids and supervise the construction of the building. Vice-President Crews has in charge the plans for the underground system.

GLOVERSVILLE, N. Y.—A telephone system which will accommodate between 5,000 and 6,000 subscribers will be installed in this city and Johnstown by the Independent Telephone Company. The local system will be operated in connection with the Independent lines of Amsterdam, Troy and other cities. Applications for franchises have been made to the common councils of Johnstown and Gloversville and as soon as these are granted active operations will be commenced.

PARSONS, Kans.—A deal has been completed which merges all the Independent telephone companies in this county and also the Pittsburg Telephone Company, into the Citizens' Home Telephone Company, with headquarters in Parsons. Parsons, Pittsburg, Chanute, Oswego, and a dozen smaller towns are included. The new company is capitalized at $500,000, with a paid up capital of $240,000, and in addition to local exchanges in the towns mentioned has over 250 miles of toll lines, and by connection with the Kinloch company and the Home Telephone Company of Kansas City the company has two toll lines into Kansas City and one into St. Louis.

EXTENSIONS AND IMPROVEMENTS

TROY, N. Y.—The Commercial Telephone Company will build a line to Mechanicsville.

AKELEY, Minn.—The Red River Lumber Company will extend its telephone line from Akeley to Squaw Lake.

DOVER, Dela.—The Diamond State Telephone Company will extend its trunk lines from Viola to Selbyville.

PETERSBURG, Ill.—The Petersburg Telephone Company has increased its capital stock from $20,000 to $100,000.

BENSON, Ill.—The Jasper County Mutual Telephone Company has increased its capital stock from $10,000 to $25,000.

CARO, Mich.—W. J. Moore of the Moore Telephone System, states that $10,000 will be expended on the proposed new system.

PITTSTOWN, N. Y.—The Pittstown Telephone Company will build a trunk line to connect with the Johnsonville Telephone Company.

BENZONIA, Mich.—The Benzie County Telephone Company has made an increase in its capital stock for the purpose of extending its lines.

HARBOR BEACH, Mich.—The Harbor Beach Telephone Company contemplates the extension of its rural lines in all directions from this place.

CHINA, Me.—The China Telephone Company is planning to extend its lines to China Neck and several new lines will be added in the spring.

REDDING, Cal.—The Redding Gold & Copper Company will extend a telephone line from Redding to its property at Clear Creek, in the near future.

CARLINSVILLE, Ill.—The Macoupin County Telephone Company is planning to expend $25,000 in extending its lines the coming

year. The company will probably connect with the People's Telephone Company thus giving subscribers access to all parts of the county.

RISING SUN, Ind.—The Farmers' Telephone Company is planning great improvements in its system, which will include an exchange at this place.

SCOTTSBLUFF, Neb.—The Platte Valley Telephone Company has decided to issue $20,000 of 6 per cent twenty year bonds, which will be put on sale about January 1.

BLOOMINGTON, Ill.—The Kinloch-Bloomington Telephone Company contemplates the expenditure of about $30,000 in the improvement of its system during the year.

DES MOINES, Ia.—The Mutual Telephone Company of this city has announced that it will spend $30,000 in improving its system in this city during the ensuing year. During the year 1905 the company expended $375,000 on its system.

THOMSON, Ga.—At a meeting of the city council the local telephone company was leased from the stockholders with the privilege of buying the property later. The capital stock of the company will be increased and many needed changes will be inaugurated. The opinion prevails that all public utilities should be owned by the town.

MINNEAPOLIS, Minn.—The Twin City Telephone Company proposes to construct about 21,000 feet of underground conduit in Minneapolis, to cost about $22,000, which together with cost of cable necessary to complete the work, will mean an expenditure of approximately $75,000, the work to be done during the next two years.

ST. JOSEPH, Mo.—At a recent meeting of the stockholders of the Citizens' Telephone Company of this city it was unanimously voted to increase the capital stock of the company from $150,000 to $1,000,000. The funds from the sale of this stock will be used in improvements in accordance with the new policy outlined by the telephone company. A new central energy exchange will be established at once.

ANDREWS, Ind.—The Andrews Telephone Company under the new management is making every effort to give good service and added conveniences, and as a result the system is growing into such favor that new telephones are being added every day and it will not be long before the present switchboard facilities will be inadequate to meet the demands. Arrangements are being made to make important extensions in the spring.

BRITT, Ia.—The Western Electric Telephone Company has authorized the expenditure of some $300,000 during the coming year, which will be spent in developing lines in the northwestern part of the state, where most of the lines owned and operated by the company are located. The company took over one of the Dakota rural lines in July last. The plans for the coming year contemplate one of the most extensive rural systems operating in the state.

FINANCIAL NOTES

MACON, Mo.—The Citizens Telephone Company has increased its capital stock $2,500.

GILBERT, O.—The Gilbert Telephone Company has increased its capital stock from $2,000 to $7,000.

SCHLESWIG, Ia.—The Schleswig Telephone Company has increased its capital stock to $20,000.

ANGOLA, Ind.—The Steuben County Telephone Company has increased its capital stock to $100,000.

CHARLOTTEVILLE, N. Y.—The Charlotteville Telephone Company has declared a dividend of 7 per cent.

SURPRISE Neb.—The Surprise Telephone Company has increased its capital stock from $50,000 to $100,000.

CRESTON, Ia.—The Creston Mutual Telephone Company has declared its sixth annual dividend of 6 per cent.

GAINESVILLE, Fla.—The East Florida Telephone Company has declared its fifth annual dividend of 2½ per cent.

LANCASTER, O.—The Lancaster Telephone Company has increased its capital stock from $100,000 to $150,000.

SIDNEY, O.—The Sidney Telephone Company has declared a semi-annual dividend of 2½ per cent on the common stock.

RUSHVILLE, O.—It is stated the Rushville Telephone Company will shortly increase its capital stock from $5,000 to $10,000.

SHELBYVILLE, Ill.—The Windsor & Okaw Mutual Telephone Company has increased its capital stock from $900 to $15,000.

HARLAN, Ia.—The Harlan and Avoca Telephone and Telegraph Company has increased its capital stock from $60,000 to $100,000.

GRANTHAM, N. H.—The Sugar River Telephone Company has declared a dividend of 6 per cent. The company is reported to be in good condition.

VAN WERT, O.—The Van Wert Home Telephone Company has notified the secretary of state of an increase of capital stock from $50,000 to $100,000.

URBANA, O.—The new board of directors of the Urbana Telephone Company was held recently and a semi-annual dividend of 4 per cent was declared.

ROCHESTER, N. Y.—The directors of the United States Independent Telephone Company voted to amend its charter of incorporation so that $20,000,000 of its $50,000,000 capital stock would be in effect preferred and dividend bearing at the rate of 4 per cent. The amended certificate has been filed with the secretary of state in Trenton, N. J.

ELYRIA, O.—The Southern Telephone Company of Elyria has filed articles with the secretary of state increasing its capital stock from $40,000 to $75,000.

HEBRON, Ill.—The directors of the Farmers' New Era Telephone Company recently declared a dividend of 9 per cent on all stock issued prior to November 1.

COLUMBIA, N. Y.—At a meeting of the directors of the Columbia Telephone Company the fifth quarterly dividend of 1¼ per cent, payable January 1, was declared.

ANAMOSA, Ia.—The Jones County Telephone Company will hereafter pay holders of preferred stock six per cent interest instead of ten. which was formerly agreed upon

TOLEDO, O.—The Toledo Home Telephone Company has announced that besides the quarterly dividend of one per cent, an extra one per cent has also been declared.

CLEVELAND, O.—The bond interest of the Cuyahoga Telephone Company, to be paid January 2, amounted to $67,500, and that of the United States Telephone Company $56,500.

MINNEAPOLIS, Kans.—The Rural Telephone Company contemplates the expenditure of $6,000 or $7,000 on its local exchange, which will be made up to date in every particular.

SEATTLE, Wash.—The Independent Telephone Company has declared its first dividend of 5 per cent. The company has about 9,000 telephones in service in the city of Seattle.

RED OAK, Ia.—The Red Oak Mutual Telephone Company has filed an amendment to its articles of incorporation with the secretary of state, increasing its capital stock to $15,000.

MANSFIELD, O.—The board of directors of the Mansfield Telephone Company has declared a dividend of 2 per cent. Reports show that the company has in operation 3,300 telephones.

LIVINGSTON, Tex.—The Livingston Telephone Company held its annual meeting on the 9th inst., re-elected a board of directors for the ensuing year, and declared a dividend of 20 per cent.

TERRE HAUTE, Ind.—The Citizens' Telephone Company of this city has reincorporated and increased its capital stock to $1,000,000. The officials state that $150,000 will be spent in improvements at once.

EAGLE, Wis.—The stockholders of the Eagle Telephone Company have voted to increase the capital stock of the company from $15,000 to $20,000. The company intends to improve and enlarge its several exchanges.

PHILADELPHIA, Pa.—It is estimated that the gross earnings of the Keystone Telephone Company of Philadelphia amounted to $786,000 in 1905, and that after meeting fixed charges there remained a surplus of $202,000.

MILLBANK, S. D.—The Grant County Telephone Company of this place contemplates a bond issue of $30,000 for the purpose of extending and improving its system. The company has built 400 miles of line since last May.

NEWARK, O.—At a meeting of the board of directors of the Newark Telephone Company the regular semi-annual dividend of 3 per cent was declared on the preferred stock and a quarterly dividend of 2 per cent on the common stock of the company.

GRAND RAPIDS, Mich.—At the meeting of the directors of the Citizens' Telephone Company, the usual quarterly dividend of 2 per cent was declared, payable January 20. Statistics showed a net growth of 3,739 telephones in the city during the year.

WHEELING, W. Va.—To make extensive improvements in its line in Washington county and over the lines in West Virginia, the National Telephone Company has negotiated a loan for $500,000 from the German bank of Wheeling, securing the same by mortgage

FAIRMONT, Minn.—The annual report of the Fairmont Telephone Company shows $1,050 expended for the Ceylon exchange, $1,060 for improvement at Hebron Lake, $1,000 paid on indebtedness and $700 in the treasury. The company expects to put in several farmers' lines during the coming season.

KINCAID, Kans.—The Eastern Kansas Telephone Company has declared an annual dividend of 10 per cent, which has been paid. This system now includes Kincaid, Selma, Oakwood, Haskell, Bayard and Lone Elm. The company contemplates putting in two more exchanges, besides toll lines, during the coming season.

GRAND RAPIDS, Mich.—The Citizens' Telephone Company has just paid its thirty-fourth quarterly dividend, amounting to a little more than $40,000, distributed among eighteen hundred stockholders. With the receipt of this dividend the original investors in the company, about three hundred, have received dividends equivalent to their investment.

SALT LAKE CITY, Utah.—At a meeting of the Utah Independent Telephone Company, held in this city, a quarterly dividend of 1 per cent was declared on the capital stock, payable on the 15th inst. According to reports the business of the company is most gratifying. The company expects to pay regular quarterly dividends in the future. The lines of the company are being rapidly extended to all sections of the intermountain country.

SEWARD, Neb.—The report of the secretary for the year shows the Seward County Telephone Company to be in excellent condition, the stock having earned 16 per cent. A dividend of 12 per

cent was declared and 4 per cent was placed in the maintenance fund. It was decided that a direct line be built to Milford from Seward and that the lockout system of farm lines be adopted, thus giving each subscriber an independent line.

PHILADELPHIA, Pa.—There has been listed on the Philadelphia Stock Exchange $2,750,000 Keystone Telephone Company steel engraved stock trust certificates issued against a like amount of common stock of the company deposited with the Union Trust Company under terms of the trust agreement of July 1, 1905. These certificates are countersigned and registered by the Provident Life and Trust Company and transferred at the offices of the Union Trust Company, agent for the voting trustees.

ASHLAND, O.—At the recent annual meeting of the Star Telephone Company reports showed a very prosperous year for the company. A 6 per cent dividend was declared, and it was voted that hereafter a 3 per cent dividend would be declared semi-annually. At present the company has 3,000 telephones in service, the increase during the past year having been 613. The system consists of 13 exchanges and 15 toll stations. The Wadsworth plant has recently been purchased by the company and added to its system. Howard Stofer is manager of the latter system.

PARKERSBURG, W. Va.—The annual report of the West Virginia Western Telephone Company shows that the earnings of the company for the year just passed were $45,988.77, against $38,538.90 in the year 1904. The expenses were $31,382.57, against $26,944.16 the preceding year, and the profits were $14,606, against $11,594.74 the previous year. During the last quarter of the year 1905 the receipts of the company amounted to $12,498.08, which was nearly eight hundred dollars more than the preceding quarter. The company has expended during the year $22,297.69 for extensions and additions.

CLEVELAND, O.—At the meeting of the board of directors of the Cuyahoga Telephone Company and United States Telephone Company a loan of $102,000 was negotiated for the Cuyahoga Telephone Company and of $63,000 for the United States Telephone Company for eight months, which gives the companies sufficient money to pay for their recent expansion and is all the money they will require for some time in the future. The loan is made with the St. Louis syndicate which has an option on the Federal telephone assets. If the Federal deal goes through between now and the first of February the loans will be paid then. I not they will later be financed by the Cuyahoga and United States telephone companies.

COUNCIL BLUFFS, Ia.—Changes in the articles of incorporation of the Independent Telephone Company of Council Bluffs have been filed for record increasing the capital stock from $100,000 to $500,000. The stock is divided into 5,000 shares of which not more than 2,000 shall be preferred stock, not more than 150 shares service stock and the balance common stock. The preferred stock is guaranteed a semi-annual dividend of three per cent. The service stock receives no dividends, but its holders receive telephone service free, and the common stock participates in the earnings over the dividend paid to the preferred stock. Only the common stock is permitted a vote at stockholders' meetings. The indebtedness of the company is limited to $325,000.

SIOUX CITY, Ia.—The board of directors of the New State Telephone Company has voted to issue $100,000 worth of securities, as common and preferred stock, for improvements and extensions in its toll service. The improvements, work on which will begin at once, will include a trunk line to Council Bluffs and South Omaha, through lines to Sioux Falls, Yankton and Elk Point, a line to Worthington, Minn., to connect with the Tri-State company's lines from Minneapolis, and an extension from Randolph to Lincoln, Neb. These extensions will increase the mileage of the company to 1,500 miles of toll lines. The exchanges of the company will undergo extensive improvements wherever needed. A new switchboard will be installed at Cherokee.

WARREN, N. H.—At the annual meeting of the Baker's River Telephone Company held on January 9, the company voted unanimously to increase its capital stock to $3,500 for the purpose of making extensions and improvements, including the installation of a new switchboard; construction work to begin as soon as possible in the spring. The company will build at least twenty miles of lines the coming season, connecting two of the largest Independent lines, with not only local, but trunk lines, thus giving the Independent companies of New Hampshire a direct line nearly the whole length of the state. The company was incorporated last season with a capital stock of $1,000, has about forty miles of wire, over fifty telephones in service, and new business ahead.

PERSONAL MENTION

ITHACA, N. Y.—A. B. Fegan has been appointed manager of the Ithaca Telephone Company.

DAYTON, O.—Frank J. Hanna has been appointed manager of the Home Telephone Company.

ELDORA, Ia.—Herbert A. Huff has been elected treasurer of the Eldora Mutual Telephone Company.

TOLEDO, O.—At a meeting of the directors of the Toledo Home Telephone Company, the resignation of E. L. Barber of Wauseon as director was accepted, and Eugene Zimmerman was named to succeed Mr. Barber.

CHICAGO, Ill.—Mr. W. S. Pearne is now advertising manager of the Baird Manufacturing Company.

ANAMOSA, Ia.—Frank Ferring has been appointed manager of the Jones County Telephone Company.

PROPHETSTOWN, Ill.—M. P. Hill has been elected president of the Prophetstown Mutual Telephone Company.

OGDEN, Ill.—The telephone system at this place has been purchased by Jas. A. Terrel of Kingman, Ind.

ROCKFORD, Ill.—W. S. Campfield has resigned as assistant manager of the Winnebago County Telephone Company.

CHICAGO, Ill.—R. S. Mitten, formerly of the Eureka Electric Co., is now with the Electric Appliance Company, Chicago.

DANSVILLE, N. Y.—Elmer E. Larham has been appointed manager of the Inter-Ocean Telephone Company in this city.

BEDIAS, Tex.—M. Templeman, who recently purchased the exchange at this place, is making extensive improvements.

MAQUOKETA, Ia.—E. D. Shipman of Monticello has been appointed manager of the Maquoketa Home Telephone Company.

CHICAGO, Ill.—Robert B. Abbott, formerly with John A. Roebling's Sons' Company, is now in the automobile business in Chicago.

ZION CITY, Ill.—Manager Fredericks, of the telephone exchange in Zion City, has resigned, and it is said will take a position traveling.

CHICAGO, Ill.—M. R. Nyman, formerly connected with the telephone press, is now western representative for the Buffalo Forge Co. at Chicago.

LA BELLE, Mo.—C. M. Bradshaw has been elected manager of the Northeast Missouri Telephone Company to succeed T. C. Yeager, resigned.

CHICAGO, Ill.—H. H. Albert, of Elkhart, Ind., represented the Star Electric Co., of Niles, O., dry battery manufacturers, at the Electrical Exposition.

DE PERE, Wis.—Will H. Martin has been appointed manager of the De Pere exchange of the Valley Telephone Company and will take charge February 1.

CHICAGO, Ill.—Perry Boole, advertising manager for the Electric Appliance Co., Chicago, was laid up in January with a broken collar bone, sustained on an icy sidewalk.

PHILADELPHIA, Pa.—Mr. W. D. Gherky, the Philadelphia engineer and contractor, has moved his offices to more commodious quarters in the Heed Building, 1211-15 Filbert street.

CHICAGO, Ill.—H. A. Nuttall, traveling representative for the Long Distance Telephone Sales Company, of Chicago, has been granted a franchise to build a telephone system at Morgan, Texas. Long Distance Telephone Sales Company equipment will be installed.

FLORA, Ind.—D. E. Miller, formerly owner of the Flora telephone plant and who later moved to Wayne, Nebraska, and constructed a telephone system in that place, has disposed of the plant at a gain of twenty-one hundred dollars, after operating it eleven months.

BOSTON, Mass.—Mr. Vinton A. Sears of this city, who some months ago resigned from the various automatic telephone companies in Massachusetts, has moved to the Sears Building, Boston, where he will continue to be interested in Independent telephone work and securities.

INDIANAPOLIS, Ind.—A. L. Tetu, general manager of the Home Telephone Company, Nashville, Tenn., is filling the position of acting manager of the Indianapolis Telephone Company, local and long distant, during the illness of Manager C. E. Stinson, who has been taken to his home in Toledo.

INDIANAPOLIS, Ind.—C. E. Stinson, formerly manager of the Toledo Home Telephone Company, but now general manager of the Indianapolis Telephone Company and the New Long Distance Telephone Company, has adopted a plan of retrenchment and has already reduced the running expenses of the company $20,000.

MILBANK, S. D.—E. D. Moor, late of Chicago, and who for some time has been in the employ of the Tri-State Telephone Company of Minneapolis, has been appointed superintendent of the Grant County Telephone Company to succeed Superintendent Templin, resigned. As per the instructions of the directors, Mr. Moor will push construction work as long as the weather will permit.

CHICAGO, Ill.—W. B. Forsyth, a prominent member of the Board of Trade, who was formerly engaged in the telephone business in this city, was fatally injured on Christmas eve by falling under an Illinois Central train at the Van Buren street station. Mr. Forsyth was a member of the firm of Forsyth & Fisk at 26-28 Randolph street in 1895. His partner, H. M. Fisk, is now of the Fisk-Newhall Telephone Manufacturing Company, Chicago.

SIOUX CITY, Ia.—Mr. George T. Hewes, who has had charge of the contract department of the Sioux City Telephone Company for the past year, has been elected manager of the Independent Telephone Clearing House of the Iowa State Telephone Association He will resign his position with the Sioux City company to take charge of the clearing house, located in Des Moines. Mr. Hewes, as inventor of the Hewes system, has done more to put the Independent telephone toll business on a business basis than any other

man in the state, and the establishment of the clearing house was largely due to his efforts.

MINNESOTA LAKE, Minn.—A. O. Cole is interested in the promotion of a new telephone company to give service to the farmers north and east of Minnesota Lake. For this purpose a meeting of the farmers of Danville and Vivian was recently held at this place and the Farmers' Star Telephone Line was organized with the following officers: President, Alex La Tourelle; vice-president, Louis Kauffmann; secretary, J. P. Kremer; treasurer, William Beyer, Jr.; director, L. Kein.

UNDER-GROUND CONSTRUCTION

ANAMOSA, Ia.—The Jones County Telephone Company will place a portion of its wires under ground.

JERSEY CITY, N. J.—The Coast Line Telephone Company, the Independent telephone company which invaded the field of the New York and New Jersey Telephone Company, has filed an application with the street and water board for permission to construct an underground system in practically every street in the city. The application was filed by William F. Midledge as attorney for the company. The matter was referred to committee and no action taken on it. The company agrees to file a bond of $10,000 as a guarantee of the proper performance of all city requirements.

REORGANIZATIONS

HUNTSVILLE, Tex.—A. B. Foster has purchased the interest of F. B. Robinson in the Huntesville telephone exchange.

DURAND, Wis.—The Durand Light and Power Company has purchased the Pepin Telephone Company's line from Durand to Arkansaw, Wis.

ST. JAMES, Minn.—Chas. Sundberg of Madelia has purchased a controlling interest in the new telephone system at this place and has taken charge of same.

MAQUOKETA, Ia.—The telephone plant at this place was recently purchased by Otto Wettstein, secretary and principal owner of the Jones County Telephone Company of Anamosa.

COLUMBUS JUNCTION, Ia.—The Columbus Junction Telephone Company has purchased the Conesville Telephone System, and its patrons will now have free service to Conesville.

ANDREWS, Ind.—The Andrews Telephone Company, owned by F. E. Fults and D. L. Snowden has been purchased by Taylor and Company. The new owners will build additional lines.

ELLSWORTH, Wis.—The Pierce County Telephone Company has purchased the Lane and Mundger line extending from Ellsworth to Maiden Rock and from Herbert to Esdale and Bay City.

ARTESIA, Tex.—Dave Runyan of Artesia and Morgan Davis of Hope have purchased a half interest in the long distance telephone line extending from Artesia to Roswell and from Artesia to Hope.

SANTA FE, N. M.—The telephone line from Santa Fe to Cerillos, owned by J. W. Mayers, has been purchased by H. T. Gibson, who has also purchased the telegraph line from Santa Fe to Torrance.

BRIDGEWATER, S. D.—J. J. Heinrich has purchased the Bridgewater Union Telephone Company's system. The new management contemplates extensive improvements as soon as the weather will permit.

KANSAS CITY, Mo.—The Richmond Telephone Company and its holdings have been purchased by the Home Telephone Company of this city, which will take over the company and operate it in the future.

CHADRON, Nebr.—The Chadron Mutual Telephone Company has been purchased by A. W. Reikman, president of the Citizens' State Bank of Chadron. W. B. Burkett will have charge of the exchange.

BELLEVUE, O.—The Bellevue Telephone Company has been reorganized and the following officers elected: President, Frank A. Knapp; vice-president, H. C. Stahl; secretary, Fred Wolfrom; treasurer, C. R. Callahan.

CANTON, Kans.—The Canton Telephone Company and rural lines owned by George Whisman has been purchased by the Cottonwood Valley Telephone Company. The new company will build additional rural lines.

CARLINVILLE, Ill.—B. M. Burke, manager of the telephone company, has applied to the council for permission to place the telephone wires underground. The matter has been referred to a committee for decision.

ESSSEX, Vt.—The Central Telephone Company has sold its lines in Chittenden and Isle counties to the Northern Telephone Company of Enosburgh Falls. C. H. Weed has been appointed superintendent, with headquarters at this pace.

CANTON, Mo.—The Lewis County Telephone Company has been reorganized as the Northeast Missouri Telephone Company, with a capital stock of $35,000. The officers are as follows: President, G. W. Morehead; vice-president, G. C. Clay; secretary, C. M. Bradshaw; treasurer, W. B. Hinton.

FAIRMONT, Minn.—At the last meeting of the board of directors of the Fairmont Telephone Company President Matison was authorized to negotiate the sale of the North Star toll line, which was built by the above company about five years ago, and the same has been purchased by A. E. Armstrong of Truman, who will convert it into a farmers' line to connect with his extensive system.

PELL CITY, Ala.—George L. Wilson, former owner of the St. Clair County Telephone Company's lines and exchange at Pell City, has sold out to R. L. Cook of Cook Springs. The exchange besides giving local service has connections with Eden, Sedden, Riverside, Cool City, Cropwell, Easonville and Cook's Springs. The system has been very prosperous and has always given excellent service.

WRIGHTSTOWN, Wis.—The Fox River Valley Telephone & Telegraph Company has purchased the system of the Wrightstown & Western Telephone Company operating in Wrightstown and also a toll line extending to Freedom with toll stations at intermediate points. This purchase also gives connection at Wrightstown with the Manitowoc & Western Company, which operates in the territory between Wrightstown and Manitowoc, including over twenty intermediate towns.

FRIENDSHIP, N. Y.—The Friendship Telephone Company has passed under the control of the New York and Pennsylvania Telephone Company. There are about 300 subscribers on the local company's lines and the best of satisfaction was given, the present change not being satisfactory. The change was brought about by one stockholder who had gained a controlling interest in the company. The transfer shuts the Inter-Ocean Telephone Company out, the Friendship company being formerly connected with this company.

COMBINATIONS

CANADIAN, Tex.—The Stockkmen's Telephone Company has acquired the Higgins & Lipscomb telephone line.

KAHOKA, Mo.—The Mississippi Valley Telephone Company has taken possession of the Kahoka Independent exchange, formerly owned by J. C. Hubinger.

MINEOLA, Ia.—The Independent Telephone Company of Council Bluffs has acquired the telephone exchange of this place. C. F. Nipp will be in charge of same as manager.

NORTH BRANCH, Minn.—The telephone lines in this vicinity owned by the Minnesota Mutual Telephone Company have been purchased by the Tri-State Telephone Company.

LOUISVILLE, Ky.—The Home Telephone Company of this city has purchased the Independent telephone line from Paducah to Viola via Folsomville, also the Lilly telephone interests.

DELMAR, Dela.—W. H. Baker, representing the Diamond State Telephone Company, met the directors of the Riverton-Delmar Telephone Company at this place and entered into an agreement by which the two companies will act jointly.

ST. JOHN, N. B.—For some time negotiations have been pending between the directors of the Central Telephone Company of Sussex and the Sackville Electric Light and Telephone Company and the two companies have been consolidated.

MORRICE, Mich.—The farmers' telephone lines east of Morrice have been united into the West Antrim Telephone Company and officers have been elected as follows: President, A. L. Beard, Morrice; secretary, W. Waters, Antrim; treasurer, P. Sardan, Antrim.

SCHENEVUS, N. Y.—The Davis & Rose Telephone companies have been consolidated and in future will be operated under one management. The new company is capitalized at $30,000. A new exchange will be installed at Worcester and rural lines extended to Decatur, South Valley, East Worcester and other points.

PANA, Ill.—A deal has been consummated whereby the Pana Telephone Company passes into the hands of the Interstate Telephone Company, the new company taking charge January 1. Other towns included in the merger are Taylorville, Morrisonville and Owaneco. It is thought other towns will be taken in later on. The officers locally will remain about the same.

TAMPA, Fla.—At a recent meeting the city council ratified the merger of the Peninsular and Bell telephone companies. The rates proffered by the Peninsular company are $2 per month for residence telephones and $4 per month for business telephones. These rates are to be in effect until after January 1, 1907, and after 2,250 telephones have been installed and operated, there shall be an increase of 50 cents on both telephones, and when a total of 3,000 telephones are in operation, there shall be a like increase.

FT. WAYNE, Ind.—The Home Telephone Company of this city will soon become the owner of the properties of the National Telephone and Telegraph Company, the merger having been decided upon at an adjourned meeting of the Home company's stockholders. It now remains for the National company's stockholders to ratify the agreement, and the two properties will become one. In return for the National's plant, comprising several hundred miles of copper toll lines in Indiana, Ohio and Michigan and exchanges in Sturgis, Mich., and Kendallville, Auburn and New Haven, Ind., the Home company will give preferred stock bearing 6 per cent interest. The stockholders also voted in favor of a new bond issue to take up the present issue. The new bonds will bear the same rate of interest as those now outstanding, but the period of redemption is extended from twelve years to thirty years.

LEGAL ITEMS

KANSAS CITY, Kans.—Suit has been brought by the People's Telephone Company against the Home Telephone Company of this city for $40,000 worth of Home stock alleged to have been promised to one John Enoch. The suit is the outgrowth of the fight waged in Kansas City three years ago to secure a franchise.

WASHINGTON, D. C.—David M. Newbold, Jr., of Baltimore, through his attorneys, Messrs. Norton & Booth, and Robinson Moncure, filed an application in the Corporation Court for the appointment of a receiver for the Capital Telephone Company of Alexandria, and asked that the affairs of the concern be wound up.

JUSTUS, O.—Suit has been instituted in Judge Harter's court to dissolve partnership in a telephone company with headquarters at this place. The plaintiffs in the case are Frank Shisler, Oscar Teeple, G. W. Kritchbaum, John McFarren, Samuel Marchand and Willis Putnam. The defendants are William Breninger, Harry Marchand, S. W. Rueggeyger, W. L. Lash and C. J. Carmichael.

NEW YORK, N. Y.—Alleging that the proposed reorganization of the Interstate Telephone Company, of New Jersey, is not in good faith, J. Thomas Reinhardt, a broker of No. 15 Wall street, has made application before Vice-Chancellor Pitney to have it put into the hands of a receiver. An order was issued returnable January 16. This company controls all the Independent lines in and about New Jersey.

WATERLOO, Ia.—C. E. Pickett, on behalf of his client, T. K. Elliott, has filed a petition instituting suit against the United States Telephone and Telegraph Company for the recovery of the aggregate sum of $32,000, said to be due petitioner This amount is claimed on three contracts entered into at the time of the transfer of the property. The claims are alleged to have been assumed by the purchasers of the United States Telephone and Telegraph Company, Messrs. Thomas Cascadden and F. F. McElhinney, in order that the transfer could be completed.

BURLINGTON, N. J.—In pursuance of a writ issued by the Court of Chancery of New Jersey all property of the Standard Telephone and Telegraph Company, operating in this city and with branch lines in various parts of Burlington county, will be sold at special master's sale on February 8. The sale will include all telegraph and telephone lines, exchanges, poles, wires, electrical appliances and all other property held by the Standard company in Burlington county, and also the telephone cable under the river between this city and Bristol. The Burlington City Loan and Trust Company is named as the complainant, and the defendants are Thomas O. Atkinson and Isaac D. Gindhart, receivers of the telephone company.

KANSAS CITY, Mo.—The Lee's Summit Telephone Company has secured from Judge Parker in the circuit court a temporary restraining order preventing the White Oak Telephone Company of Lone Oak from entering into a contract with any other local company to supply it with a swithcboard and long distance connections. The Lee's Summit company claims to have a contract to put in a switchboard and supply toll service for a period of twenty years, which the White Oak company now seeks to repudiate and make a contract with another company. The Lee's Summit company claims to have expended $15,000 in preparing to fill this contract and that the company will be out this much unless the contract is kept, and therefore wants a permanent injunction issued.

MISCELLANEOUS

MANCHESTER, O.—The telephone exchange at this place was recently destroyed by fire.

BUDA, Ill.—The Empire Telephone Company is constructing a new line from Buda to Bradford.

TECUMSEH, Neb.—The new Independent telephone system expects to have its new plant in operation by April 1.

WHEELER, N. Y.—The Wheeler and Kanona Telephone Company held a meeting for the election of officers on the 9th inst.

FLORA, Ind.—The Home Telephone Company has completed its system and a telephone war is now on between the companies.

CLAY CITY, Ky.—The exchange of the Eastern Kentucky Telephone Company, located at this place, was recently destroyed by fire.

JANESVILLE, Wis.—The Rock County Telephone Company has just issued a new directory which shows 1,500 subscribers on its list.

PARIS, Fance.—The telephone administration announces a direct telephone line from Paris to Nice, to be inaugurated at a probable cost of $200,000.

SCOTLAND, S. D.—The Scotland Independent Telephone Company is building a rural telephone line extending to the farming community west of this place.

KIOWA, I. T.—W. Cason Telephone Company has just built a new exchange at this place and added fifty-seven subscribers. A new switchboard has also been installed.

VERSAILLES, Ky.—The Fayette Home Telephone Company has just installed a new central energy switchboard in its exchange at this place, by which it has increased its capacity from 417 to 700. The company has three hundred names on its list waiting to have telephones installed.

ANSLEY, Nebr.—The Boxelder Farmers' Independent Telephone Company which was organized at this place some time ago now has twenty-four miles of line in operation.

LEHIGH, Ia.—The Lehigh Telephone Company has recently added several miles of new telephone lines to its system and its exchange is steadily being enlarged and increased.

PITTSBURG, Pa.—Paul Kamerer of this city is the inventor of a new telephone attachment which registers the number of calls that have been transmitted over the telephone. With this register it will be possible to keep an accurate account of the calls made.

SAND POINT, Idaho—Nathan Powell of Saglo, T. P. Craig, Geo. Matthews and William McKinney are promoting a company to install a telephone system between Saglo and Sand Point.

PETERBOROUGH, Ont.—The Canadian Machine Telephone Company is pushing the work of installing its telephone system in Peterborough and the installation, so far as it has gone, is giving good service.

GREAT BEND, Kans.—The Great Bend Telephone Company, which operates about 200 miles of toll lines in the west central part of the state, has changed its name to the Arkansas Valley Telephone Company.

ALBANY, N. Y.—The Independent Telephone Securities Company has filed with the secretary of state a certificate announcing that it has changed its principal place of business from Utica to Rochester.

BRAYMER, Mo.—The Braymer Telephone Exchange, which has 210 telephones in service, is one of the finest local systems in North Missouri. The system covers the territory around Braymer. Mr. F. B. Brady is owner of the company.

BERGEN, N. Y.—On February 8th the Bergen Telephone Company will sever its connection with the Bell Company and be connected with the Independent long distance system, which will give connection with 75,000 Independent telephones.

CARROLLTON, Mo.—A new telephone system may be established in this city in the near future At a recent meeting of the city council R. Lozier and F. H. Holmes, representing the Home Telephone Company of Kansas City, asked that a franchise be granted.

NAUVOO, Ill.—The Nauvoo Independent Telephone Company, which is owned by Dr. Bortz, and which was formerly a Bell licensee, has severed its connection with the Bell company and has made connection with the Mississippi Valley system at its Ft. Madison exchange.

BINGHAMTON, N. Y.—The board of police commissioners has adopted a resolution requesting the common council to authorize an appropriation for a police telephone system. This is the first step gained by Chief Moore in a six years' fight for a police telephone system.

GERMANTOWN, O.—At a meeting of the directors of the Germantown Independent Telephone Company it was decided to sever connection with the Central Union toll lines. A new Independent line has been constructed connecting with the Dayton and Miamisburg Home systems.

BOWLING GREEN, Ky.—At the request of C. U. McElroy, of Bowling Green, the State Board of Valuation and Assessments reduced the assessment placed on the property of the Bowling Green Home Telephone Company, making the amount $30,000 instead of $40,000, as it was placed at first. The assessment for the past year was $20,000.

PARKERSBURG, W. Va.—The regular annual meeting of the West Virginia Independent Telephone Association will be held at the Chancellor Hotel in this city, February 22 and 23. Special pains are being taken to make this the largest telephone meeting ever held in the state.

GRANBURY, Tex.—R. W. Bowden and others are organizing a company to build an exchange at Granbury and a toll line extending to Ft. Worth. Since the sale of the local exchange some months ago to the Southwestern, the Independents have been cut off from the outside world. It is stated plenty of local caiptal is behind the enterprise.

SUSSEX, N. B.—The Central Telephone Company has completed a line through Sheffield, Maugerville, Barker's Point and Lower St. Marys, and proposes to continue it into Frederickton, N. B. An office will be opened in Frederickton, where connection will be made with the Union Telephone Company's lines.

ROCKFORD, Ill.—The Illinois Central Railroad is equipping its entire service with Independent telephone service. More than 2,000 miles of metallic long distance telephone circuit already has been installed from Chicago to Omaha, and Chicago to New Orleans, Grenada and Jackson, Miss.; Sioux City and Ft. Dodge, Ia.; Carbondale, Ill., and St. Louis, and Water Valley, Miss.

CAMDEN, N. J.—A successful labratory test was recently made in this city of the invention of Dr. Robert De Unger of Chicago The invention is a submarine telephone and the inventor claims that by his device a person can talk at a distance of 50.000 miles with satisfaction. Mr. De Unger is negotiating with a number of capitalists with a view of establishing a submarine cable. The invention is covered by patents and a corporation has been formed under the laws of New Jersey.

IN THE RURAL LINE DISTRICTS

Illustrated by O. H. Brandenburg

Telephone war at Wingo between rival lines.—*An Observer in Louisville (Ky.) Post.*

Wallace Rucker will resign his position as "hello" boy in the Olive Hill Telephone Exchange to-morrow.—*Ashland (Ky.) Independent.*

Rockport will soon be connected with the outside world by telephone. The poles are all up and the wire is being put on top of them.—*Galveston (Tex.) News.*

The Home Telephone Company is contemplating the extension of their line past Mrs. Ada Bauer Goldsmith farms.—*Collinsville Notes in Hamilton (Ohio) Republican.*

The Home Telephone Co. are putting an exchange in our place and will also put in a number of boxes, on their line.—*Shannon Items in Hamilton (Ohio) News.*

With a Home telephone in your house you can have instant communication with the police or fire department in case of an emergency.—*Crawfordsville (Ind.) Journal.*

The telephones are quite a convenience to the people and seem to be well liked by all, judging by the use made of them.—*Oakcreek Items in Charleston (W. Va.) Telegram.*

The Automatic and the Bell telephone companies have been working hard to get an exchange in here, and some farm lines.—*Germantown Notes in Lincoln (Neb.) Star.*

Mr. J. J. Haga, one of Polk county's prosperous farmers, has purchased a share in the Johnson telephone line and has ordered him a phone.—*Springfield (Mo.) Republican.*

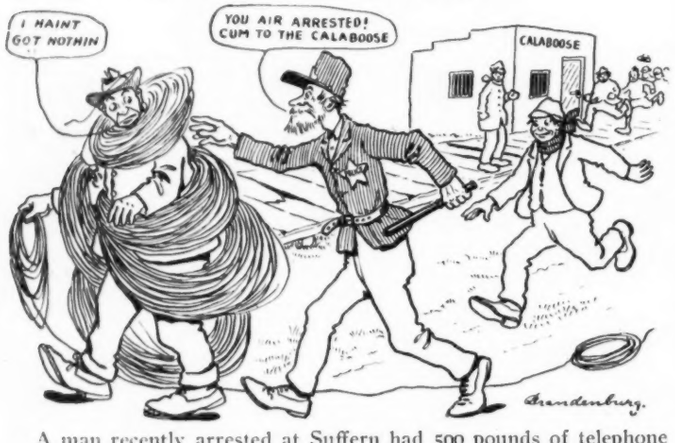
A new citizens' telephone line is soon to be built beginning at P. V. Coe's and leading to Albany. It will be built by No.'s 9-12-13-14 lines.—*Woodyard Items in Athens (Ohio) Journal.*

The Home Improvement Company is rushing the telephone line as much as possible, but it looks as though the men will be annoyed with cold fingers before it is completed.—*Crystal Items in Grand Forks (N. D.) Herald.*

It is said that the Phone Co. proposes to have a central here, and in case they do locate it here, Jensen Bros., our local general merchandise merchants, will have charge of it.—*Pine Grove News in Green Bay (Wis.) Advocate.*

Smallpox in the telephone exchange tied up the service for five hours here. When Manager Moellering was informed that Lillian Walbolt had the disease he notified the health officers, and they sent the five girl operators home. Before the girls left their clothing, heads, faces and hands were fumigated.—*Fort Wayne Correspondent of Huntington (Ind.) Democrat.*

A rural telephone line is being extended to the farming community west of town by the Scotland Independent Telephone Company. A novel feature of some branch lines which also will be constructed will be that the wires will be attached to fence posts instead of being strung on poles, as is the case with the main lines.—*Scotland Correspondent in Mitchell (S. D.) Republican.*



A man recently arrested at Suffern had 500 pounds of telephone wire on his person worth $90.—*Local Dashes in Middletown (N. Y.) Press.*

Foster Williams, superintendent of the local telephone company, intends to equip his men with life preservers. While installing a phone in a residence at Silver Springs last Friday they were connecting the lightning arrester in the cellar, it is reported that one

WISH ID A HAD THIS FORE I FELL IN
SAY BOSS I DONT FEEL EXACTLY SAFE IN DIS
AW YOU COULDNT FALL IN A BARREL NO HOW
BRING ON YER SOFT SOAP
NOW MEN YOU CAN WORK IN SAFETY
Brandenburg.

of the linemen fell into a barrel of soft soap, and but for the timely arrival of a physician, who was in the house at the time, it would have been all day with "Punk."—*Castile Correspondent in Warsaw (N. Y.) Times.*

At last the telephone people have sent a booth here, and it will be put in this week at their central, at W. H. Vin Camp's meat market. This is something that has been much needed, and the general public will be glad to learn of the change.—*Canton (Ill.) Register.*

The country telephone is the greatest gossip stimulator and patent eavesdropper of the age. A youth may "call up" his "best girl" and find his conversation printed in the local paper next week. This is from a Missouri exchange: "They do say that John Piper would rather talk over the phone than eat. They say that he has worn the ringer off the phone and is thinking of getting just a plain gold ring. They also say that while talk is cheap it will soon take cash to buy groceries and that while one or two chairs may suffice now he will soon be furnishing a house complete. Now, Johnnie, if you are going to need cards for the affair we would be tickled to death to print them. We don't mean telephone cards either, Johnnie."—*Kansas City Star.*

The Amherst Woman's Club has again reached its limit of membership, the persons admitted at the last meeting bringing the list of names to 200. Women from North, East and South Amherst belong to the club, many of them also being members of the club in their section of the town. The trolley has enabled all these to work together to advantage, and the telephone lines recently extended make it possible for those separated by many miles to consult concerning plans and programs. With this harmony and concerted opinion and action among the women, the day seems not far distant when the ends of the town shall act with the center for the common good, and the farmers will no longer attend town meeting to oppose the "aristocrats" in the village.—*Amherst Doings in Springfield (Mass.) Union.*

Harry Higley went down to Omaha last Tuesday to see the "head push" of the Nebraska Telephone Co. as to whether he was to have charge of the new plant being put in here or not. He had been in suspense over the matter for some time and wanted a definite answer. He got it, all right, where the chicken got the ax. He is to go down and out and a man of Omaha by the name of Hitchcock will be the manager of the new plant. They thought to enlist Harry's sympathy by offering him the position as local solicitor but he told them he didn't care to play second fiddle. Mr. Higley has been a faithful manager for the company here for about twenty years and it would look as though he had earned a promotion such as management of the new plant would mean. Turning him down at this time will not aid the Nebraska people in the telephone war that is now in progress in this city and they need not be surprised if his sympathies and possibly his energies will be with the home company in the future.—*Blair (Neb.) Currier.*